



Bihar Urban Infrastructure Development Corporation Limited

A Government of Bihar Undertaking

Bihar Urban Development Investment Program -Tranche 2
(ADB Loan: 3612-IND)

BIDDING DOCUMENT

Improvement of Water Supply System in Bhagalpur Municipal Corporation (BWSP-02) – Package BH/WS/02

Under ADB's Single Stage Two Envelope Bidding Procedure

(National Competitive Bidding)

March 2018

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Invitation for Bids No.: BUIDCo/BUDIP-2/NCB /02

NCB No.: BH/WS/02

**Employer: Bihar Urban Infrastructure Development Corporation Ltd,
Government of Bihar**

Country: India

Foreword

This Standard Bidding Document for the Procurement of Works (SBD Works) has been prepared by the Asian Development Bank (ADB) and is based on the Master Procurement Document entitled "Bidding Document for the Procurement of Works", prepared by multilateral development banks and other public international financial institutions which reflects the majority view of these institutions. This document has the structure and the provisions of the Master Procurement Document, except where ADB-specific considerations have required a change.

This SBD is supported by a User's Guide. The User's Guide contains detailed explanations and recommendations to Employers on how to prepare a specific bidding document for the procurement of works and how to evaluate bids. The User's Guide is not a part of the bidding document.

To obtain further information on procurement under ADB-financed projects, contact

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Preface

This Bidding Document for the Procurement of Works has been prepared by **Bihar Urban Infrastructure Development Corporation Ltd. (BUIDCo), A Government of Bihar Undertaking, INDIA** and is based on the Standard Bidding Document for the Procurement of Works (*SBD Works*) issued by the Asian Development Bank dated December 2016.

ADB's *SBD Works* has the structure and the provisions of the Master Procurement Document entitled "Bidding Documents for the Procurement of Works", prepared by multilateral development banks and other public international financial institutions, except where ADB-specific considerations have required a change.

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Section 1 - Instructions to Bidders

This Section specifies the procedures to be followed by Bidders in the preparation and submission of their Bids. Information is also provided on the submission, opening, evaluation of bids, and on the award of contract.

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Section 1 - Instructions to Bidders

A. General

- 1. Scope of Bid**
 - 1.1 In connection with the Invitation for Bids (IFB) indicated in the Bid Data Sheet (BDS), the Employer, as indicated in the BDS, issues this Bidding Document for the procurement of Works as specified in Section 6 (Employer's Requirements). The name, identification, and number of contracts of the international competitive bidding (ICB) are provided in the BDS.
 - 1.2 Throughout this Bidding Document,
 - (a) the term "in writing" means communicated in written form and delivered against receipt;
 - (b) except where the context requires otherwise, words indicating the singular also include the plural and words indicating the plural also include the singular; and
 - (c) "day" means calendar day.
- 2. Source of Funds**
 - 2.1 The Borrower or Recipient (hereinafter called "Borrower") indicated in the BDS has applied for or received financing (hereinafter called "funds") from the Asian Development Bank (hereinafter called "ADB") toward the cost of the project named in the BDS. The Borrower intends to apply a portion of the funds to eligible payments under the contract(s) for which this Bidding Document is issued.
 - 2.2 Payments by the ADB will be made only at the request of the Borrower and upon approval by ADB in accordance with the terms and conditions of the Financing Agreement between the Borrower and ADB (hereinafter called "Financing Agreement"), and will be subject in all respects to the terms and conditions of that Financing Agreement. No party other than the Borrower shall derive any rights from the Financing Agreement or have any claim to the funds.
- 3. Fraud and Corruption**
 - 3.1 ADB's Anticorruption Policy requires Borrowers (including beneficiaries of ADB-financed activity), as well as Bidders, Suppliers, and Contractors under ADB-financed contracts, observe the highest standard of ethics during the procurement and execution of such contracts. In pursuance of this policy, ADB
 - (a) defines, for the purposes of this provision, the terms set forth below as follows:
 - (i) "corrupt practice" means the offering, giving, receiving, or soliciting, directly or indirectly, anything of value to influence improperly the actions of another party;
 - (ii) "fraudulent practice" means any act or omission, including a misrepresentation, that knowingly or recklessly misleads, or attempts to mislead, a party to obtain a financial or other benefit or to avoid an obligation;

- (iii) “coercive practice” means impairing or harming, or threatening to impair or harm, directly or indirectly, any party or the property of the party to influence improperly the actions of a party;
 - (iv) “collusive practice” means an arrangement between two or more parties designed to achieve an improper purpose, including influencing improperly the actions of another party;
 - (v) “obstructive practice” means (a) deliberately destroying, falsifying, altering, or concealing of evidence material to an ADB investigation; (b) making false statements to investigators in order to materially impede an ADB investigation; (c) failing to comply with requests to provide information, documents, or records in connection with an Office of Anticorruption and Integrity (OAI) investigation; (d) threatening, harassing, or intimidating any party to prevent it from disclosing its knowledge of matters relevant to the investigation or from pursuing the investigation; or (e) materially impeding ADB’s contractual rights of audit or access to information; and
 - (vi) “integrity violation” is any act which violates ADB’s Anticorruption Policy, including (i) to (v) above and the following: abuse, conflict of interest, violations of ADB sanctions, retaliation against whistleblowers or witnesses, and other violations of ADB’s Anticorruption Policy, including failure to adhere to the highest ethical standard.
- (b) will reject a proposal for award if it determines that the Bidder recommended for award has, directly or through an agent, engaged in corrupt, fraudulent, collusive, coercive, or obstructive practices or other integrity violations in competing for the Contract;
 - (c) will cancel the portion of the financing allocated to a contract if it determines at any time that representatives of the Borrower or of a beneficiary of ADB-financing engaged in corrupt, fraudulent, collusive, coercive, or obstructive practices or other integrity violations during the procurement or the execution of that contract, without the Borrower having taken timely and appropriate action satisfactory to ADB to remedy the situation;
 - (d) will impose remedial actions on a firm or an individual, at any time, in accordance with ADB’s Anticorruption Policy and Integrity Principles and Guidelines (both as amended from time to time), including declaring ineligible, either indefinitely or for a stated period of time, to participate¹ in ADB-financed, -administered, or -supported activities or to benefit from an ADB-financed, -administered, or -supported contract, financially or otherwise, if it at any time determines that the firm or individual has, directly or through an agent, engaged in corrupt, fraudulent, collusive, coercive, or obstructive practices or other integrity violations; and

¹ Whether as a Contractor, Nominated Subcontractor, Consultant, Manufacturer or Supplier, or Service Provider; or in any other capacity (different names are used depending on the particular Bidding Document). A Nominated Subcontractor is one that either has been (i) included by the Bidder in its prequalification application or bid because it brings specific and critical experience and know-how that are accounted for in the evaluation of the bidder’s prequalification application or the bid; or (ii) appointed by the Employer.

(e) will have the right to require that a provision be included in bidding documents and in contracts financed by ADB, requiring Bidders, suppliers and contractors to permit ADB or its representative to inspect their accounts and records and other documents relating to the bid submission and contract performance and to have them audited by auditors appointed by ADB.

3.2 Furthermore, Bidders shall be aware of the provision stated in Subclause 1.15 and 15.6 of the Conditions of Contract.

4. Eligible Bidders

4.1 A Bidder may be a natural person, private entity, or government-owned enterprise subject to ITB 4.5—or any combination of them with a formal intent to enter into an agreement or under an existing agreement in the form of a Joint Venture. In the case of a Joint Venture,

(a) all partners shall be jointly and severally liable; and

(b) the Joint Venture shall nominate a Representative who shall have the authority to conduct all business for and on behalf of any and all the parties of the Joint Venture during the bidding process and, in the event the Joint Venture is awarded the Contract, during contract execution.

4.2 A Bidder, and all parties constituting the Bidder, shall have the nationality of an eligible country, in accordance with Section 5 (Eligible Countries). A Bidder shall be deemed to have the nationality of a country if the Bidder is a citizen or is constituted, incorporated, or registered, and operates in conformity with the provisions of the laws of that country. This criterion shall also apply to the determination of the nationality of proposed subcontractors or suppliers for any part of the Contract including related services.

4.3 A Bidder shall not have a conflict of interest. All Bidders found to have a conflict of interest shall be disqualified. A Bidder may be considered to be in a conflict of interest with one or more parties in the bidding process if any of, including but not limited to, the following apply:

(a) they have controlling shareholders in common; or

(b) they receive or have received any direct or indirect subsidy from any of them; or

(c) they have the same legal representative for purposes of this bid; or

(d) they have a relationship with each other, directly or through common third parties, that puts them in a position to have access to material information about or improperly influence the bid of another Bidder, or influence the decisions of the Employer regarding this bidding process; or

(e) a Bidder participates in more than one bid in this bidding process, either individually or as a partner in a joint venture, except for alternative offers permitted under ITB 13 of the Bidding Document. This will result in the disqualification of all Bids in which it is involved. However, subject to any finding of a conflict of interest in terms of ITB 4.3(a)-(d) above, this does not limit the participation

of a Bidder as a Subcontractor in another Bid or of a firm as a Subcontractor in more than one Bid; or

- (f) a Bidder or any affiliated entity, participated as a Consultant in the preparation of the design or technical specifications of the works that are the subject of the Bid; or
- (g) a Bidder was affiliated with a firm or entity that has been hired (or is proposed to be hired) by the Employer or Borrower as Engineer for the contract.

4.4 A firm shall not be eligible to participate in any procurement activities under an ADB-financed, -administered, or -supported project while under temporary suspension or debarment by ADB pursuant to its Anticorruption Policy (see ITB 3), whether such debarment was directly imposed by ADB, or enforced by ADB pursuant to the Agreement for Mutual Enforcement of Debarment Decisions. A bid from a temporary suspended or debarred firm will be rejected.

4.5 Government-owned enterprises in the Employer's country shall be eligible only if they can establish that they (i) are legally and financially autonomous, (ii) operate under commercial law, and (iii) are not a dependent agency of the Employer.

4.6 Bidders shall provide such evidence of their continued eligibility satisfactory to the Employer, as the Employer shall reasonably request.

4.7 Firms shall be excluded if by an act of compliance with a decision of the United Nations Security Council taken under Chapter VII of the Charter of the United Nations, the Borrower's country prohibits any import of goods or contracting of works or services from that country or any payments to persons or entities in that country.

4.8 In case a prequalification process has been conducted prior to the bidding process, this bidding is open only to prequalified Bidders.

5. Eligible Materials, Equipment and Services

5.1 The materials, equipment, and services to be supplied under the Contract shall have their origin in eligible source countries as defined in ITB 4.2 above and all expenditures under the Contract will be limited to such materials, equipment, and services. At the Employer's request, Bidders may be required to provide evidence of the origin of materials, equipment, and services.

5.2 For purposes of ITB 5.1 above, "origin" means the place where the materials and equipment are mined, grown, produced, or manufactured, and from which the services are provided. Materials and equipment are produced when, through manufacturing, processing, or substantial or major assembling of components, a commercially recognized product results that differs substantially in its basic characteristics or in purpose or utility from its components.

B. Contents of Bidding Document

- 6. Sections of Bidding Document**
- 6.1 The Bidding Document consist of Parts I, II, and III, which include all the sections indicated below, and should be read in conjunction with any addenda issued in accordance with ITB 8.
- PART I Bidding Procedures**
 Section 1 - Instructions to Bidders (ITB)
 Section 2 - Bid Data Sheet (BDS)
 Section 3 - Evaluation and Qualification Criteria (EQC)
 Section 4 - Bidding Forms (BDF)
 Section 5 - Eligible Countries (ELC)
- PART II Requirements**
 Section 6 - Employer's Requirements (ERQ)
- PART III Conditions of Contract and Contract Forms**
 Section 7 - General Conditions of Contract (GCC)
 Section 8 - Particular Conditions of Contract (PCC)
 Section 9 - Contract Forms (COF)
- 6.2 The IFB issued by the Employer is not part of the Bidding Document.
- 6.3 The Employer is not responsible for the completeness of the Bidding Document and their addenda, if they were not obtained directly from the source stated by the Employer in the IFB.
- 6.4 The Bidder is expected to examine all instructions, forms, terms, and specifications in the Bidding Document. Failure to furnish all information or documentation required by the Bidding Document may result in the rejection of the bid.
- 7. Clarification of Bidding Document, Site Visit, Pre-Bid Meeting**
- 7.1 A prospective Bidder requiring any clarification on the Bidding Document shall contact the Employer in writing at the Employer's address indicated in the BDS or raise his inquiries during the pre-bid meeting if provided for in accordance with ITB 7.4. The Employer will respond in writing to any request for clarification, provided that such request is received no later than 21 days prior to the deadline for submission of bids. The Employer shall forward copies of its response to all Bidders who have acquired the Bidding Document in accordance with ITB 6.3, including a description of the inquiry but without identifying its source. Should the Employer deem it necessary to amend the Bidding Document as a result of a request for clarification, it shall do so following the procedure under ITB 8 and ITB 22.2.
- 7.2 The Bidder is advised to visit and examine the Site of Works and its surroundings and obtain for itself on its own responsibility all information that may be necessary for preparing the Bid and entering into a contract for construction of the Works. The costs of visiting the Site shall be at the Bidder's own expense.
- 7.3 The Bidder and any of its personnel or agents will be granted permission by the Employer to enter its premises and lands for the purpose of such visit, but only upon the express condition that the Bidder, its personnel, and agents will release and indemnify the

Employer and its personnel and agents from and against all liability in respect thereof, and will be responsible for death or personal injury, loss of or damage to property, and any other loss, damage, costs, and expenses incurred as a result of the inspection.

- 7.4 The Bidder's designated representative is invited to attend a pre-bid meeting, if provided for in the BDS. The purpose of the meeting will be to clarify issues and to answer questions on any matter that may be raised at that stage.
- 7.5 The Bidder is requested to submit any questions in writing, to reach the Employer not later than 1 week before the meeting.
- 7.6 Minutes of the pre-bid meeting, including the text of the questions raised, without identifying the source, and the responses given, together with any responses prepared after the meeting, will be transmitted promptly to all Bidders who have acquired the Bidding Document in accordance with ITB 6.3. Any modification to the Bidding Document that may become necessary as a result of the pre-bid meeting shall be made by the Employer exclusively through the issue of an addendum pursuant to ITB 8 and not through the minutes of the pre-bid meeting.
- 7.7 Nonattendance at the pre-bid meeting will not be a cause for disqualification of a Bidder.

8. Amendment of Bidding Document

- 8.1 At any time prior to the deadline for submission of Bids, the Employer may amend the Bidding Document by issuing addenda.
- 8.2 Any addendum issued shall be part of the Bidding Document and shall be communicated in writing to all who have obtained the Bidding Document from the Employer in accordance with ITB 6.3.
- 8.3 To give prospective Bidders reasonable time in which to take an addendum into account in preparing their Bids, the Employer may, at its discretion, extend the deadline for the submission of Bids, pursuant to ITB 22.2

C. Preparation of Bids

9. Cost of Bidding

- 9.1 The Bidder shall bear all costs associated with the preparation and submission of its Bid, and the Employer shall in no case be responsible or liable for those costs, regardless of the conduct or outcome of the bidding process.

10. Language of Bid

- 10.1 The Bid, as well as all correspondence and documents relating to the bid exchanged by the Bidder and the Employer, shall be written in the language specified in the BDS. Supporting documents and printed literature that are part of the Bid may be in another language provided they are accompanied by an accurate translation of the relevant passages in the language specified in the BDS, in which case, for purposes of interpretation of the Bid, such translation shall govern.

**11. Documents
Comprising the
Bid**

11.1 The Bid shall comprise two envelopes submitted simultaneously, one called the Technical Bid containing the documents listed in ITB 11.2 and the other the Price Bid containing the documents listed in ITB 11.3, both envelopes enclosed together in an outer single envelope.

11.2 The Technical Bid shall comprise the following:

- (a) Letter of Technical Bid;
- (b) Bid Security or Bid-Securing Declaration, in accordance with ITB 19;
- (c) alternative Bids, if permissible, in accordance with ITB 13;
- (d) written confirmation authorizing the signatory of the Bid to commit the Bidder, in accordance with ITB 20.2;
- (e) documentary evidence in accordance with ITB 17, establishing the Bidder's qualifications to perform the contract;
- (f) Technical Proposal in accordance with ITB 16;
- (g) Any other document required in the BDS.

11.3 The Price Bid shall comprise the following:

- (a) Letter of Price Bid;
- (b) completed Price Schedules, in accordance with ITB 12 and ITB 14;
- (c) alternative price Bids, at Bidder's option and if permissible, in accordance with ITB 13;
- (d) Any other document required in the BDS.

11.4 In addition to the requirements under ITB 11.2, Bids submitted by a Joint Venture shall include a copy of the Joint Venture Agreement entered into by all partners. Alternatively, a Letter of Intent to execute a Joint Venture Agreement in the event of a successful Bid shall be signed by all partners and submitted with the Bid, together with a copy of the proposed agreement.

**12. Letters of Bid and
Schedules**

12.1 The Letters of Technical Bid and Price Bid, and the Schedules, including the Bill of Quantities, shall be prepared using the relevant forms furnished in Section 4 (Bidding Forms). The forms must be completed without any alterations to the text, and no substitutes shall be accepted. All blank spaces shall be filled in with the information requested and as required in the BDS.

13. Alternative Bids

13.1 Unless otherwise indicated in the BDS, alternative Bids shall not be considered.

13.2 When alternative times for completion are explicitly invited, a statement to that effect will be included in the BDS, as will the method of evaluating different times for completion.

13.3 Except as provided under ITB 13.4 below, Bidders wishing to offer technical alternatives to the requirements of the Bidding Document must first price the Employer's design as described in the Bidding Document and shall further provide all information necessary for a

complete evaluation of the alternative by the Employer, including drawings, design calculations, technical specifications, breakdown of prices, and proposed construction methodology and other relevant details. Only the technical alternatives, if any, of the lowest evaluated Bidder conforming to the basic technical requirements shall be considered by the Employer.

13.4 When specified in the BDS, Bidders are permitted to submit alternative technical solutions for specified parts of the Works. Such parts will be identified in the BDS and described in Section 6 (Employer's Requirements). The method for their evaluation will be stipulated in Section 3 (Evaluation and Qualification Criteria).

14. Bid Prices and Discounts

14.1 The prices and discounts quoted by the Bidder in the Letter of Price Bid and in the Bill of Quantities shall conform to the requirements specified below.

14.2 The Bidder shall fill in rates and prices for all items of the Works described in the Bill of Quantities. Items against which no rate or price is entered by the Bidder will not be paid for by the Employer when executed and shall be deemed covered by the rates for other items and prices in the Bill of Quantities.

14.3 The price to be quoted in the Letter of Price Bid, in accordance with ITB 12.1, shall be the total price of the Bid, excluding any discounts offered. . Absence of the total bid price in the Letter of Price Bid may result in the rejection of the Bid.

14.4 The Bidder shall quote any discounts and the methodology for their application in the Letter of Price Bid, in accordance with ITB 12.1.

14.5 Unless otherwise provided in the BDS and the Contract, the rates and prices quoted by the Bidder are subject to adjustment during the performance of the Contract in accordance with the provisions of the Conditions of Contract. In such a case, the Bidder shall furnish the indexes and weightings for the price adjustment formulas in the Tables of Adjustment Data included in Section 4 (Bidding Forms) and the Employer may require the Bidder to justify its proposed indexes and weightings.

14.6 If so indicated in ITB 1.1, bids are being invited for individual contracts or for any combination of contracts (packages). Bidders wishing to offer any price reduction for the award of more than one Contract shall specify in their bid the price reductions applicable to each package, or alternatively, to individual Contracts within the package. Price reductions or discounts shall be submitted in accordance with ITB 14.4, provided the Bids for all contracts are submitted and opened at the same time.

14.7 All duties, taxes, and other levies payable by the Contractor under the Contract, or for any other cause, as of the date 28 days prior to the deadline for submission of bids, shall be included in the rates and prices and the total Bid Price submitted by the Bidder.

15. Currencies of Bid and Payment

- 15.1 The unit rates and the prices shall be quoted by the Bidder entirely in the currency specified in the BDS.
- 15.2 Bidders shall indicate the portion of the bid price that corresponds to expenditures incurred in the currency of the Employer's country in the Schedule of Payment Currencies included in Section 4 (Bidding Forms).
- 15.3 Bidders expecting to incur expenditures in other currencies for inputs to the Works supplied from outside the Employer's country and wishing to be paid accordingly may indicate up to three foreign currencies in the Schedule of Payment Currencies included in Section 4 (Bidding Forms).
- 15.4 The rates of exchange to be used by the Bidder for currency conversion during bid preparation shall be the selling rates for similar transactions prevailing on the date 28 days prior to the deadline for submission of bids published by the source specified in the BDS. If exchange rates are not so published for certain currencies, the Bidder shall state the rates used and the source. Bidders should note that for the purpose of payments, the exchange rates confirmed by the source specified in the BDS as the selling rates prevailing 28 days prior to the deadline for submission of Bids shall apply for the duration of the Contract so that no currency exchange risk is borne by the Bidder.
- 15.5 Foreign currency requirements indicated by the Bidders in the Schedule of Payment Currencies shall include but not limited to the specific requirements for
- (a) expatriate staff and labor employed directly on the Works;
 - (b) social, insurance, medical and other charges relating to such expatriate staff and labor, and foreign travel expenses;
 - (c) imported materials, both temporary and permanent, including fuels, oil and lubricants required for the Works;
 - (d) depreciation and usage of imported Plant and Contractor's Equipment, including spare parts, required for the Works;
 - (e) foreign insurance and freight charges for imported materials, Plant and Contractor's Equipment, including spare parts; and
 - (f) overhead expenses, fees, profit, and financial charges arising outside the Employer's country in connection with the Works.
- 15.6 Bidders may be required by the Employer to clarify their foreign currency requirements, and to substantiate that the amounts included in the unit rates and prices and shown in the Schedule of Payment Currencies are reasonable and responsive to ITB 15.3 above, in which case a detailed breakdown of its foreign currency requirements shall be provided by the Bidder.
- 15.7 Bidders should note that during the progress of the Works, the foreign currency requirements of the outstanding balance of the Contract Price may be adjusted by agreement between the Employer and the Contractor in order to reflect any changes in foreign currency requirements for the Contract, in accordance with Subclause 14.15 of

the Conditions of Contract. Any such adjustment shall be effected by comparing the percentages quoted in the bid with the amounts already used in the Works and the Contractor's future needs for imported items.

- 16. Documents Comprising the Technical Proposal**
- 16.1 The Bidder shall furnish a Technical Proposal including a statement of work methods, equipment, personnel, schedule, and any other information as stipulated in Section 4 (Bidding Forms), in sufficient detail to demonstrate the adequacy of the Bidders' proposal to meet the work requirements and the completion time.
- 17. Documents Establishing the Qualifications of the Bidder**
- 17.1 To establish its qualifications to perform the Contract in accordance with Section 3 (Evaluation and Qualification Criteria) the Bidder shall provide the information requested in the corresponding information sheets included in Section 4 (Bidding Forms).
- 17.2 Domestic Bidders, individually or in joint ventures, applying for eligibility for domestic preference shall supply all information required to satisfy the criteria for eligibility as described in ITB 35.
- 18. Period of Validity of Bids**
- 18.1 Bids shall remain valid for the period specified in the BDS after the bid submission deadline date prescribed by the Employer. A bid valid for a shorter period shall be rejected by the Employer as nonresponsive.
- 18.2 In exceptional circumstances, prior to the expiration of the bid validity period, the Employer may request Bidders to extend the period of validity of their Bids. The request and the responses shall be made in writing. If a bid security is requested in accordance with ITB 19, it shall also be extended 28 days beyond the deadline of the extended validity period. A Bidder may refuse the request without forfeiting its bid security. A Bidder granting the request shall not be required or permitted to modify its Bid.
- 19. Bid Security/Bid-Securing Declaration**
- 19.1 Unless otherwise specified in the BDS, the Bidder shall furnish as part of its Bid, in original form, either a Bid-Securing Declaration or a bid security as specified in the BDS. In the case of a bid security, the amount and currency shall be as specified in the BDS.
- 19.2 If a Bid-Securing Declaration is required pursuant to ITB 19.1, it shall use the form included in Section 4 (Bidding Forms). The Employer will declare a Bidder ineligible to be awarded a Contract for a specified period of time, as indicated in the BDS, if the Bid-Securing Declaration is executed.
- 19.3 If a bid security is specified pursuant to ITB 19.1, the bid security shall be, at the Bidder's option, in any of the following forms:
- (a) an unconditional bank guarantee,
 - (b) an irrevocable letter of credit, or
 - (c) a cashier's or certified check,
- all from a reputable source from an eligible country as described in Section 5 (Eligible Countries). In the case of a bank guarantee, the bid security shall be submitted either using the Bid Security Form included

in Section 4 (Bidding Forms) or another form acceptable to the Employer. The form must include the complete name of the Bidder. The bid security shall be valid for 28 days beyond the original validity period of the bid, or beyond any period of extension if requested under ITB 18.2.

19.4 Unless otherwise specified in the BDS, any Bid not accompanied by a substantially compliant bid security or Bid-Securing Declaration, if one is required in accordance with ITB 19.1, shall be rejected by the Employer as nonresponsive.

19.5 If a bid security is specified pursuant to ITB 19.1, the bid security of unsuccessful Bidders shall be returned as promptly as possible upon the successful Bidder's furnishing of the performance security pursuant to ITB 42.

19.6 If a bid security is specified pursuant to ITB 19.1, the bid security of the successful Bidder shall be returned as promptly as possible once the successful Bidder has signed the Contract and furnished the required performance security.

19.7 The bid security may be forfeited or the Bid Securing Declaration executed,

(a) if a Bidder withdraws its bid during the period of bid validity specified by the Bidder on the Letters of Technical Bid and Price Bid, except as provided in ITB 18.2; or

(b) if the successful Bidder fails to

(i) sign the Contract in accordance with ITB 41;

(ii) furnish a performance security in accordance with ITB 42;

(iii) accept the arithmetical correction of its Bid in accordance with ITB 33; or

(iv) furnish a domestic preference security, if so required.

19.8 The Bid Security or Bid Securing Declaration of a Joint Venture shall be in the name of the Joint Venture that submits the Bid. If the Joint Venture has not been legally constituted at the time of bidding, the bid security or Bid-Securing Declaration shall be in the names of all future partners as named in the letter of intent mentioned in ITB 4.1.

20. Format and Signing of Bid

20.1 The Bidder shall prepare one original set of the Technical Bid and one original set of the Price Bid comprising the Bid as described in ITB 11 and clearly mark it "ORIGINAL - TECHNICAL BID" and "ORIGINAL - PRICE BID." Alternative Bids, if permitted in accordance with ITB 13, shall be clearly marked "ALTERNATIVE." In addition, the Bidder shall submit copies of the Technical and Price Bids, in the number specified in the BDS, and clearly mark each of them "COPY." In the event of any discrepancy between the original and the copies, the original shall prevail.

20.2 The original and all copies of the Bid shall be typed or written in indelible ink and shall be signed by a person duly authorized to sign on behalf of the Bidder. This authorization shall consist of a written

confirmation as specified in the BDS and shall be attached to the bid. The name and position held by each person signing the authorization must be typed or printed below the signature. All pages of the Bid, except for unamended printed literature, shall be signed or initialed by the person signing the Bid. If a Bidder submits a deficient authorization, the Bid shall not be rejected in the first instance. The Employer shall request the Bidder to submit an acceptable authorization within the number of days as specified in the BDS. Failure to provide an acceptable authorization within the prescribed period of receiving such a request shall cause the rejection of the Bid.

- 20.3 Any amendments such as interlineations, erasures, or overwriting shall be valid only if they are signed or initialed by the person signing the Bid.

D. Submission and Opening of Bids

21. Sealing and Marking of Bids

- 21.1 Bidders may always submit their Bids by mail or by hand. When so specified in the BDS, Bidders shall have the option of submitting their Bids electronically. Procedures for submission, sealing, and marking are as follows:
- (a) Bidders submitting Bids by mail or by hand shall enclose the original of the Technical Bid, the original of the Price Bid, and each copy of the Technical Bid and each copy of the Price Bid, in separate sealed envelopes, duly marking the envelopes as "ORIGINAL - TECHNICAL BID," "ORIGINAL - PRICE BID," and "COPY NO... - TECHNICAL BID" and "COPY NO.... - PRICE BID." These envelopes, the first containing the originals and the others containing copies, shall then be enclosed in one single envelope per set. If permitted in accordance with ITB 13, alternative Bids shall be similarly sealed, marked and included in the sets. The rest of the procedure shall be in accordance with ITB 21.2 and ITB 21.5.
 - (b) Bidders submitting Bids electronically shall follow the electronic bid submission procedures specified in the BDS.
- 21.2 The inner and outer envelopes shall
- (a) bear the name and address of the Bidder;
 - (b) be addressed to the Employer in accordance with BDS 22.1; and
 - (c) bear the specific identification of this bidding process indicated in the BDS 1.1.
- 21.3 The outer envelopes and the inner envelopes containing the Technical Bid shall bear a warning not to open before the time and date for the opening of Technical Bid, in accordance with ITB 25.1.
- 21.4 The inner envelopes containing the Price Bid shall bear a warning not to open until advised by the Employer in accordance with ITB 25.7.
- 21.5 If all envelopes are not sealed and marked as required, the Employer will assume no responsibility for the misplacement or premature opening of the Bid.

- 22. Deadline for Submission of Bids**
- 22.1 Bids must be received by the Employer at the address and no later than the date and time indicated in the BDS.
- 22.2 The Employer may, at its discretion, extend the deadline for the submission of Bids by amending the Bidding Document in accordance with ITB 8, in which case all rights and obligations of the Employer and Bidders previously subject to the deadline shall thereafter be subject to the deadline as extended.
- 23. Late Bids**
- 23.1 The Employer shall not consider any Bid that arrives after the deadline for submission of bids, in accordance with ITB 22. Any bid received by the Employer after the deadline for submission of Bids shall be declared late, rejected, and returned unopened to the Bidder.
- 24. Withdrawal, Substitution, and Modification of Bids**
- 24.1 A Bidder may withdraw, substitute, or modify its Bid – Technical or Price – after it has been submitted by sending a written notice, duly signed by an authorized representative, and shall include a copy of the authorization in accordance with ITB 20.2, (except that withdrawal notices do not require copies). The corresponding substitution or modification of the Bid must accompany the respective written notice. All notices must be
- (a) prepared and submitted in accordance with ITB 20 and ITB 21 (except that withdrawal notices do not require copies), and in addition, the respective envelopes shall be clearly marked “WITHDRAWAL,” “SUBSTITUTION,” “MODIFICATION”; and
 - (b) received by the Employer no later than the deadline prescribed for submission of Bids, in accordance with ITB 22.
- 24.2 Bids requested to be withdrawn in accordance with ITB 24.1 shall be returned unopened to the Bidders.
- 24.3 No Bid may be withdrawn, substituted, or modified in the interval between the deadline for submission of Bids and the expiration of the period of bid validity specified by the Bidder on the Letters of Technical Bid and Price Bid or any extension thereof.
- 25. Bid Opening**
- 25.1 The Employer shall open the Technical Bids in public at the address, on the date and time specified in the BDS in the presence of Bidders` designated representatives and anyone who chooses to attend. Any specific electronic bid opening procedures required if electronic bidding is permitted in accordance with ITB 21.1, shall be as specified in the BDS. The Price Bids will remain unopened and will be held in custody of the Employer until the specified time of their opening. If the Technical Bid and the Price Bid are submitted together in one envelope, the Employer may reject the entire Bid. Alternatively, the Price Bid may be immediately resealed for later evaluation.
- 25.2 First, envelopes marked “WITHDRAWAL” shall be opened and read out and the envelope with the corresponding Bid shall not be opened, but returned to the Bidder. No bid withdrawal shall be permitted unless the corresponding withdrawal notice contains a valid authorization to request the withdrawal and is read out at bid opening.

- 25.3 Second, outer envelopes marked "SUBSTITUTION" shall be opened. The inner envelopes containing the Substitution Technical Bid and/or Substitution Price Bid shall be exchanged for the corresponding envelopes being substituted, which are to be returned to the Bidder unopened. Only the Substitution Technical Bid, if any, shall be opened, read out, and recorded. Substitution Price Bid will remain unopened in accordance with ITB 25.1. No envelope shall be substituted unless the corresponding substitution notice contains a valid authorization to request the substitution and is read out and recorded at bid opening.
- 25.4 Next, outer envelopes marked "MODIFICATION" shall be opened. No Technical Bid and/or Price Bid shall be modified unless the corresponding modification notice contains a valid authorization to request the modification and is read out and recorded at the opening of Technical Bids. Only the Technical Bids, both Original as well as Modification, are to be opened, read out, and recorded at the opening. Price Bids, both Original as well as Modification, will remain unopened in accordance with ITB 25.1.
- 25.5 All other envelopes holding the Technical Bids shall be opened one at a time, and the following read out and recorded:
- (a) the name of the Bidder;
 - (b) whether there is a modification or substitution;
 - (c) the presence of a bid security or Bid-Securing Declaration, if required; and
 - (d) any other details as the Employer may consider appropriate.
- Only Technical Bids and alternative Technical Bids read out and recorded at bid opening shall be considered for evaluation. Unless otherwise specified in the BDS, all pages of the Letter of Technical Bid are to be initialed by at least three representatives of the Employer attending bid opening. No Bid shall be rejected at the opening of Technical Bids except for late bids, in accordance with ITB 23.1.
- 25.6 The Employer shall prepare a record of the opening of Technical Bids that shall include, as a minimum, the name of the Bidder and whether there is a withdrawal, substitution, or modification; alternative proposals; and the presence or absence of a bid security or Bid-Securing Declaration, if one was required. The Bidders' representatives who are present shall be requested to sign the record. The omission of a Bidder's signature on the record shall not invalidate the contents and effect of the record. A copy of the record shall be distributed to all Bidders who submitted Bids on time, and posted online when electronic bidding is permitted.
- 25.7 At the end of the evaluation of the Technical Bids, the Employer will invite bidders who have submitted substantially responsive Technical Bids and who have been determined as being qualified for award to attend the opening of the Price Bids. The date, time, and location of the opening of Price Bids will be advised in writing by the Employer. Bidders shall be given reasonable notice of the opening of Price Bids.

- 25.8 The Employer will notify Bidders in writing who have been rejected on the grounds of their Technical Bids being substantially nonresponsive to the requirements of the Bidding Document and return their Price Bids unopened.
- 25.9 The Employer shall conduct the opening of Price Bids of all Bidders who submitted substantially responsive Technical Bids, in the presence of Bidders' representatives who choose to attend at the address, on the date, and time specified by the Employer. The Bidder's representatives who are present shall be requested to sign a register evidencing their attendance.
- 25.10 All envelopes containing Price Bids shall be opened one at a time and the following read out and recorded:
- (a) the name of the Bidder;
 - (b) whether there is a modification or substitution;
 - (c) the Bid Prices, including any discounts and alternative offers; and
 - (d) any other details as the Employer may consider appropriate.

Only Price Bids discounts, and alternative offers read out and recorded during the opening of Price Bids shall be considered for evaluation. Unless otherwise specified in the BDS, all pages of the Letter of Price Bid and Bill of Quantities are to be initialed by at least three representatives of the Employer attending bid opening. No Bid shall be rejected at the opening of Price Bids.

- 25.11 The Employer shall prepare a record of the opening of Price Bids that shall include, as a minimum, the name of the Bidder, the Bid Price (per lot if applicable), any discounts, and alternative offers. The Bidders' representatives who are present shall be requested to sign the record. The omission of a Bidder's signature on the record shall not invalidate the contents and effect of the record. A copy of the record shall be distributed to all Bidders who submitted Bids on time, and posted online when electronic bidding is permitted.

E. Evaluation and Comparison of Bids

26. Confidentiality

- 26.1 Information relating to the examination, evaluation, comparison, and postqualification of Bids and recommendation of contract award, shall not be disclosed to Bidders or any other persons not officially concerned with such process until information on the Contract award is communicated to all Bidders.
- 26.2 Any attempt by a Bidder to influence the Employer in the evaluation of the Bids or Contract award decisions may result in the rejection of its Bid.
- 26.3 Notwithstanding ITB 26.2, from the time of bid opening to the time of Contract award, if any Bidder wishes to contact the Employer on any matter related to the bidding process, it may do so in writing.

- 27. Clarification of Bids**
- 27.1 To assist in the examination, evaluation, and comparison of the Technical and Price Bids, the Employer may, at its discretion, ask any Bidder for a clarification of its Bid. Any clarification submitted by a Bidder that is not in response to a request by the Employer shall not be considered. The Employer's request for clarification and the response shall be in writing. No change in the substance of the Technical Bid or prices in the Price Bid shall be sought, offered, or permitted, except to confirm the correction of arithmetic errors discovered by the Employer in the evaluation of the Price Bids, in accordance with ITB 33.
- 27.2 If a Bidder does not provide clarifications of its Bid by the date and time set in the Employer's request for clarification, its Bid may be rejected.
- 28. Deviations, Reservations, and Omissions**
- 28.1 During the evaluation of Bids, the following definitions apply:
- (a) "Deviation" is a departure from the requirements specified in the Bidding Document;
 - (b) "Reservation" is the setting of limiting conditions or withholding from complete acceptance of the requirements specified in the Bidding Document; and
 - (c) "Omission" is the failure to submit part or all of the information or documentation required in the Bidding Document.
- 29. Examination of Technical Bids**
- 29.1 The Employer shall examine the Technical Bid to confirm that all documents and technical documentation requested in ITB 11.2 have been provided, and to determine the completeness of each document submitted.
- 29.2 The Employer shall confirm that the following documents and information have been provided in the Technical Bid. If any of these documents or information is missing, the offer shall be rejected.
- (a) Letter of Technical Bid;
 - (b) written confirmation of authorization to commit the Bidder;
 - (c) Bid Security or Bid-Securing Declaration, if applicable; and
 - (d) Technical Proposal in accordance with ITB 16.
- 30. Responsiveness of Technical Bid**
- 30.1 The Employer's determination of a Bid's responsiveness is to be based on the contents of the bid itself, as defined in ITB11.
- 30.2 A substantially responsive Technical Bid is one that meets the requirements of the Bidding Document without material deviation, reservation, or omission. A material deviation, reservation, or omission is one that,
- (a) if accepted, would:
 - (i) affect in any substantial way the scope, quality, or performance of the Works specified in the Contract; or
 - (ii) limit in any substantial way, inconsistent with the Bidding Document, the Employer's rights or the Bidder's obligations under the proposed Contract; or

(b) if rectified, would unfairly affect the competitive position of other Bidders presenting substantially responsive Bids.

30.3 The Employer shall examine the technical aspects of the Bid submitted in accordance with ITB 16, Technical Proposal, in particular, to confirm that all requirements of Section 6 (Employer's Requirements) have been met without any material deviation, reservation, or reservation.

30.4 If a Bid is not substantially responsive to the requirements of the Bidding Document, it shall be rejected by the Employer and may not subsequently be made responsive by correction of the material deviation, reservation, or omission.

31. Nonmaterial Nonconformities

31.1 Provided that a Bid is substantially responsive, the Employer may waive any nonconformities in the Bid that do not constitute a material deviation, reservation, or omission.

31.2 Provided that a Technical Bid is substantially responsive, the Employer may request that the Bidder submit the necessary information or documentation, within a reasonable period of time, to rectify nonmaterial nonconformities in the Technical Bid related to documentation requirements. Requesting information or documentation on such nonconformities shall not be related to any aspect of the Price Bid. Failure of the Bidder to comply with the request may result in the rejection of its Bid.

31.3 Provided that a Technical Bid is substantially responsive, the Employer shall rectify quantifiable nonmaterial nonconformities related to the Bid Price. To this effect, the Bid Price shall be adjusted, for comparison purposes only, to reflect the price of a missing or non-conforming item or component. The adjustment shall be made using the method indicated in Section 3 (Evaluation and Qualification Criteria).

32. Qualification of the Bidder

32.1 The Employer shall determine to its satisfaction during the evaluation of Technical Bids whether Bidders meet the qualifying criteria specified in Section 3 (Evaluation and Qualification Criteria).

32.2 The determination shall be based upon an examination of the documentary evidence of the Bidder's qualifications submitted by the Bidder, pursuant to ITB 17.1.

32.3 An affirmative determination shall be a prerequisite for the opening and evaluation of a Bidder's Price Bid. A negative determination shall result into the disqualification of the Bid, in which event the Employer shall return the unopened Price Bid to the Bidder.

33. Correction of Arithmetical Errors

33.1 During the evaluation of Price Bids, the Employer shall correct arithmetical errors on the following basis:

(a) If there is a discrepancy between the unit price and the total price that is obtained by multiplying the unit price and quantity, the unit price shall prevail and the total price shall be corrected, unless in the opinion of the Employer there is an obvious misplacement of the decimal point in the unit price, in which case the total price as quoted shall govern and the unit price shall be corrected.

- (b) If there is an error in a total corresponding to the addition or subtraction of subtotals, the subtotals shall prevail and the total shall be corrected.
 - (c) If there is a discrepancy between the bid price in the Summary of Bill of Quantities and the bid amount in item (c) of the Letter of Price Bid, the bid price in the Summary of Bill of Quantities will prevail and the bid amount in item (c) of the Letter of Price Bid will be corrected.
 - (d) If there is a discrepancy between words and figures, the amount in words shall prevail, unless the amount expressed in words is related to an arithmetic error, in which case the amount in figures shall prevail subject to (a), (b) and (c) above.
- 33.2 If the Bidder that submitted the lowest evaluated bid does not accept the correction of errors, its Bid shall be disqualified and its bid security may be forfeited or its Bid-Securing Declaration executed.
- 34. Conversion to Single Currency**
- 34.1 For evaluation and comparison purposes, the currency(ies) of the Bid shall be converted into a single currency as specified in the BDS.
- 35. Margin of Preference**
- 35.1 Unless otherwise specified in the BDS, a margin of preference shall not apply.
- 36. Evaluation of Price Bids**
- 36.1 The Employer shall use the criteria and methodologies listed in this Clause. No other evaluation criteria or methodologies shall be permitted.
- 36.2 To evaluate the Price Bid, the Employer shall consider the following:
- (a) the bid price, excluding Provisional Sums and the provision, if any, for contingencies in the Summary Bill of Quantities, but including Daywork items, where priced competitively;
 - (b) price adjustment for correction of arithmetic errors in accordance with ITB 33.1;
 - (c) price adjustment due to discounts offered in accordance with ITB 14.4;
 - (d) converting the amount resulting from applying (a) to (c) above, if relevant, to a single currency in accordance with ITB 34;
 - (e) adjustment for nonconformities in accordance with ITB 31.3; and
 - (f) application of all the evaluation factors indicated in Section 3 (Evaluation and Qualification Criteria).
- 36.3 The estimated effect of the price adjustment provisions of the Conditions of Contract, applied over the period of execution of the Contract, shall not be taken into account in bid evaluation.
- 36.4 If this Bidding Document allows Bidders to quote separate prices for different contracts, and the award to a single Bidder of multiple contracts, the methodology to determine the lowest evaluated price of the contract combinations, including any discounts offered in the Letter of Price Bid, is specified in Section 3 (Evaluation and Qualification Criteria).

- 36.5 If the Bid, which results in the lowest Evaluated Bid Price, is seriously unbalanced or front loaded in the opinion of the Employer, the Employer may require the Bidder to produce detailed price analyses for any or all items of the Bill of Quantities, to demonstrate the internal consistency of those prices with the construction methods and schedule proposed. After evaluation of the price analyses, taking into consideration the schedule of estimated Contract payments, the Employer may require that the amount of the performance security be increased at the expense of the Bidder to a level sufficient to protect the Employer against financial loss in the event of default of the successful Bidder under the Contract.
- 37. Comparison of Bids** 37.1 The Employer shall compare all substantially responsive Bids to determine the lowest evaluated Bid, in accordance with ITB 36.2.
- 38. Employer's Right to Accept Any Bid, and to Reject Any or All Bids** 38.1 The Employer reserves the right to accept or reject any Bid, and to annul the bidding process and reject all Bids at any time prior to contract award, without thereby incurring any liability to Bidders. In case of annulment, all Bids submitted and specifically, bid securities, shall be promptly returned to the Bidders.

F. Award of Contract

- 39. Award Criteria** 39.1 The Employer shall award the Contract to the Bidder whose offer has been determined to be the lowest evaluated Bid and is substantially responsive to the Bidding Document, provided further that the Bidder is determined to be qualified to perform the Contract satisfactorily.
- 40. Notification of Award** 40.1 Prior to the expiration of the period of bid validity, the Employer shall notify the successful Bidder, in writing, that its Bid has been accepted.
- 40.2 At the same time, the Employer shall also notify all other Bidders of the results of the bidding. The Employer will publish in an English language newspaper or well-known freely accessible website the results identifying the bid and lot numbers and the following information: (i) name of each Bidder who submitted a Bid; (ii) bid prices as read out at bid opening; (iii) name and evaluated prices of each Bid that was evaluated; (iv) name of bidders whose bids were rejected and the reasons for their rejection; and (v) name of the winning Bidder, and the price it offered, as well as the duration and summary scope of the contract awarded. After publication of the award, unsuccessful Bidders may request in writing to the Employer for a debriefing seeking explanations on the grounds on which their Bids were not selected. The Employer shall promptly respond in writing to any unsuccessful Bidder who, after publication of contract award, requests a debriefing.
- 40.3 Until a formal contract is prepared and executed, the notification of award shall constitute a binding Contract.
- 41. Signing of Contract** 41.1 Promptly after notification, the Employer shall send the successful Bidder the Contract Agreement.
- 41.2 Within 28 days of receipt of the Contract Agreement, the successful Bidder shall sign, date, and return it to the Employer.

42. Performance Security

- 42.1 Within 28 days of the receipt of notification of award from the Employer, the successful Bidder shall furnish the performance security in accordance with the conditions of contract, subject to ITB 36.5, using for that purpose the Performance Security Form included in Section 9 (Contract Forms), or another form acceptable to the Employer.
- 42.2 Failure of the successful Bidder to submit the above-mentioned Performance Security or to sign the Contract Agreement shall constitute sufficient grounds for the annulment of the award and forfeiture of the bid security or execution of the Bid-Securing Declaration. In that event, the Employer may award the Contract to the next lowest evaluated Bidder whose offer is substantially responsive and is determined by the Employer to be qualified to perform the Contract satisfactorily.
- 42.3 The above provision shall also apply to the furnishing of a domestic preference security if so required.

Section 2 - Bid Data Sheet

This Section consists of provisions that are specific to each procurement and supplement the information or requirements included in Section 1 - Instructions to Bidders.

A. General

ITB 1.1	The number of the Invitation for Bids is : BUIDCo/BUDIP-2/NCB/02
ITB 1.1	The Employer is: State of Bihar, acting through its Urban Development and Housing Department (UDHD), in turn acting through the Bihar Urban Infrastructure Development Corporation Ltd. (BUIDCo). The authorized representative of the Employer is Design and Supervision Consultants (DSC).
ITB 1.1	<p>The name of the National Competitive Bidding (NCB) is: Improvement of Water Supply System in Bhagalpur Municipal Corporation (BWSP-02)</p> <p>The identification number of the NCB is: BH/WS/02</p> <p>The number and identification of lots comprising this NCB is: One</p>
ITB 2.1	The Borrower is: India
ITB 2.1	The name of the Project is: Bihar Urban Development Investment Program - Project 2 (ADB Loan 3612-IND)

B. Contents of Bidding Documents

ITB 7.1	<p>For clarification purposes only, the Employer's address is:</p> <p>Attention: Mr. Birendra Kumar, Additional Program Director</p> <p>Program Management Unit, Bihar Urban Development Investment Program</p> <p>Bihar Urban Infrastructure Development Corporation Ltd (BUIDCo)</p> <p>Street Address: #SFC Building, 2nd Floor, Daroga Prasad Rai Path, R Block, Road No 2.</p> <p>City: Patna, Bihar</p> <p>ZIP Code: 800 001</p> <p>Country: India</p> <p>Telephone: +91612-2506109</p>
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	<p>Mobile No: 9934409242</p> <p>Facsimile number: +91612- 2210103</p> <p>Electronic mail address: apdinpmu.buidco@gmail.com</p> <p>Notwithstanding the provisions of ITB7.1, the Employer will respond to any request for clarifications, provided that such request is received no later than 15 days prior to the deadline for submission of bids.</p>
ITB 7.4	<p>A Pre-Bid meeting will take place as follows :</p> <p>Date: 05 April 2018</p> <p>Time: 11:00 Hrs</p> <p>Place: Conference Hall, BUIDCo</p> <p>A site visit conducted by the Employer will be organized at 11:00 hrs on 06 April 2018.</p>

C. Preparation of Bids

ITB 10.1	The language of the Bid is: English
ITB 11.2 (g)	<p>The Bidder shall submit with its Technical Bid the following additional documents:</p> <p>(i) Audited and certified balance sheets of bidder for the last three financial years.</p> <p>(ii) In case the Bidder is a Joint Venture: a valid JV Agreement legally notarized or attested by an appropriate authority in the bidders' home country, or a formal Letter of Intent to enter into a JV, specifying the financial stakes of each of the joint venture partners.</p> <p>(iii) In case the Bidder includes a Specialist Subcontractor: a valid subcontracting agreement or a formal Letter of Intent to enter into a subcontracting agreement.</p>
ITB 11.2 (h)	<p>The Bidder shall submit with its Technical Bid the following additional documents:</p> <p>Documents Establishing the Eligibility of Plant, Material and Services</p> <p>(i) To establish the eligibility of the plant, material and services in accordance with ITB 5, Bidders shall complete the country of origin declarations in the Price Schedule Forms, included in Section 4 (Bidding Forms)</p> <p>Documents Establishing Conformity of the Plant, Material and Services</p> <p>(ii) The documentary evidence of the conformity of the plant, material and services to the Bidding Document may be in the form of literature, drawings and data, and shall furnish:</p> <p>(a) a detailed description of the essential technical and performance characteristics of the plant, material and services, including the functional guarantees of the proposed plant, material and services, in response to the Specification;</p> <p>(b) a list giving full particulars, including available sources, of all spare</p>

	<p>parts and special tools necessary for the proper and continuing functioning of the plant for the period named in the BDS, following completion of plant, material and services in accordance with provisions of the contract; and</p> <p>(iii) A commentary on the Employer's Specifications and adequate evidence demonstrating the substantial responsiveness of the plant and services to those specifications. Bidders shall note that standards for workmanship, materials and equipment designated by the Employer in the Bidding Document are intended to be descriptive (establishing standards of quality and performance) only and not restrictive. The Bidder may substitute alternative standards, brand names and/or catalog numbers in its Bid, provided that it demonstrates to the Employer's satisfaction that the substitutions are substantially equivalent or superior to the standards designated in the Specifications. Bidders may note that this pertains to specifications and standards of equipment proposed only and not for the alternative technology/proposal for the Plant, Material and Services.</p>
ITB 11.3 (d)	The Bidder shall submit with its Price Bid the following additional documents: Nil
ITB 12.1	The units and rates in figures entered into the Bill of Quantities and Daywork Schedule should be typewritten or if written by hand, must be in print form. Bill of Quantities and Daywork Schedule not presented accordingly may be considered nonresponsive.
ITB 13.1	Alternative bids shall not be permitted.
ITB 13.2	Alternatives times for completion shall not be permitted
ITB 13.4	Alternative technical solutions shall not be permitted
ITB 14.5	The prices quoted by the Bidder shall be : Adjustable
ITB 14.7	<p>Add the following at end of Sub ITB 14.7</p> <p>The Employer will assist the Contractor to obtain any lawful exemptions from payment of Goods and Services Tax (GST) notified under Central Goods and Services Tax (CGST) Rules, 2017, if available through any Government Notification.</p> <p>The responsibility for obtaining any such exemptions from the Competent Authority will remain with the Contractor and the Employer shall not in any way be responsible for admissibility of the claims or eligibility of the Contractor.</p> <p>The exemption if any availed by the contractor shall be passed on to the employer.</p>
ITB 15.1	The currencies of the Bid shall be as follows:

	<p>(a) The prices shall be quoted either in the currency of the Employer's country (i.e. Indian Rupees), or in any fully convertible currency of up to three foreign currencies.</p> <p>(b) A Bidder expecting to incur a portion of its expenditures in the performance of the Contract in more than one currency, and wishing to be paid accordingly, shall so indicate in the Schedule of Prices and the Letter of Bid.</p> <p>(c) If some of the contract expenditures related to Design, Installation, and Other Services are to be incurred in the Employer's country, such expenditures shall be quoted in either foreign and/or local currency, depending upon the currency in which the costs are to be incurred.</p> <p>(d) Bidders may be required by the Employer to clarify their local and foreign currency requirements, and to substantiate that the amounts included in the Price Schedules are reasonable and responsive to ITB 14.5 in which case a detailed breakdown of its foreign currency requirements shall be provided by the Bidder.</p> <p>(e) During the performance of the contract, the foreign currency portions of the outstanding balance of the Contract Price may be adjusted by agreement between the Employer and the Contractor to reflect any changes in foreign currency requirements for the contract. Any such adjustment shall be effected by comparing the amounts quoted in the bid with the amounts already used in the Facilities and the Contractor's future needs for imported items.</p>
ITB 15.4	The rates of exchange shall be the selling rates 28 days prior to the deadline for submission of bids published by: Reserve Bank of India
ITB 18.1	The bid validity period shall be 120 days.
ITB 19.1	The Bidder shall furnish a bid security in the amount of INR 26.00 million Bid Securing Declaration shall not be accepted.
ITB19.2	Not applicable
ITB 19.3	<p>Replace ITB 19.3 with the following:-</p> <ol style="list-style-type: none"> a. an unconditional bank guarantee; b. an irrevocable letter of credit; or c. demand draft <p>All from a reputable source <i>from an eligible country as described in Section 5 (Eligible Countries)</i> in the name of Managing Director, Bihar Urban Infrastructure Development Corporation Ltd, Patna.</p> <p>In the case of a bank guarantee, the bid security shall be submitted using the Bid Security Form included in Section 4 (Bidding Forms). The form must include the complete name of the Bidder. The bid security shall be valid for 28 days beyond the original validity period of the bid, or beyond any period of extension if</p>

	<p>requested under ITB 18.2.</p> <p>The bank guarantee shall be issued by a reputable bank located in the Employer's country, which may include scheduled banks or nationalized banks, or by a foreign reputable bank outside the Employer's country, through a correspondent bank located in the Employer's country, which may include banks in Patna, to make it enforceable.</p>
ITB 19.4	<p>Subject to the succeeding sentences, any bid not accompanied by an irrevocable and callable bid security shall be rejected by the Employer as nonresponsive. If a Bidder submits a bid security that (i) deviates in form, amount, and/or period of validity, or (ii) does not provide sufficient identification of the Bidder (including, without limitation, failure to indicate the name of the Joint Venture or, where the Joint Venture has not yet been constituted, the names of all future Joint Venture Partners), the Employer shall request the Bidder to submit a compliant bid security within fourteen (14) days of receiving such a request. Failure to provide a compliant bid security within the prescribed period of receiving such a request shall cause the rejection of the Bid.</p>
ITB 20.1	<p>In addition to the original Bid, the number of copies is: one</p>
ITB 20.2	<p>The written confirmation of authorization to sign on behalf of the Bidder shall consist of: An organizational document, board resolution or its equivalent, or power of attorney specifying the representative's authority to sign the Bid on behalf of the Bidder. If the Bidder is an intended or an existing joint venture, the power of attorney should be signed by all partners and specify the authority of the named representative of the joint venture to sign on behalf of the intended or existing joint venture. If the joint venture has not yet been formed, also include evidence from all proposed joint venture partners of their intent to enter into a joint venture in the event of a contract award.</p>
ITB 20.2	<p>The Bidder shall submit an acceptable authorization within 14 days.</p>

D. Submission and Opening of Bids

ITB 21.1	<p>Bidders shall not have the option of submitting their bids electronically.</p>
ITB 21.1 (b)	<p>If Bidders shall have the option of submitting their Bids electronically, the electronic bidding submission procedures shall be: Not applicable</p>
ITB 22.1	<p>For <u>bid submission purposes</u> only, the Employer's address is</p> <p>Attention: Managing Director, Bihar Urban Infrastructure Development Corporation Ltd,</p> <p>Street Address: #SFC Building, 2nd Floor, Daroga Prasad Rai Path, R Block, Road No 2.</p> <p>City: Patna, Bihar</p>

	ZIP Code: 800 001 Country: India Telephone: +91612-2506109 Facsimile number: +91612- 2210103 Electronic mail address: apdinpmu.buidco@gmail.com The deadline for bid submission is Date: 18 May 2018 Time: 15:00 Hrs
ITB 25.1	The bid opening of Technical Bids shall take place at Street Address: #SFC Building, 2nd Floor, Daroga Prasad Rai Path, R Block, Road No 2 City: Patna, Bihar ZIP Code: 800 001 Country: India Date: on the same day of Bid submission Time: Immediately after the deadline of bid submission
ITB 25.1	Electronic bid opening procedure shall not be applicable.
ITB 25.5	The Letter of Technical Bid shall be initialed by at-least three representatives of the Employer attending Bid opening.
ITB 25.10	The Letter of Price Bid and Bill of Quantities shall be initialed by at-least three representatives of the Employer attending Bid opening.

E. Evaluation and Comparison of Bids

ITB 32.1	The currency that shall be used for bid evaluation and comparison purposes to convert all bid prices expressed in various currencies into a single currency is: Indian Rupees (INR) The source of the selling exchange rate shall be: Reserve Bank of India The date for the selling exchange rate shall be: 28 days prior to the deadline for submission of bids.
ITB 33.1	A margin of preference shall not apply.

Section 3 - Evaluation and Qualification Criteria

- Without Prequalification -

This Section contains all the criteria that the Employer shall use to evaluate bids and qualify Bidders. In accordance with ITB 32 and ITB 36, no other methods, criteria and factors shall be used. The Bidder shall provide all the information requested in the forms included in Section 4 (Bidding Forms).

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1. Evaluation

In addition to the criteria listed in ITB 36.2 (a) – (e), other relevant factors are as follows:

1.1 Adequacy of Technical Proposal

Evaluation of the Bidder's Technical Proposal will include an assessment of the Bidder's technical capacity to mobilize key equipment and personnel for the contract consistent with its proposal regarding work methods, scheduling, and material sourcing in sufficient detail and fully in accordance with the requirements stipulated in Section 6 (Employer's Requirements).

Non-compliance with equipment and personnel requirements described in Section 6 (Employer's Requirements) shall not normally be a ground for bid rejection and such non-compliance will be subject to clarification during bid evaluation and rectification prior to contract award.

1.2 Completion Time

An alternative Completion Time, if permitted under ITB 13.2, will be evaluated as follows: Not applicable

1.3 Technical Alternatives

Technical alternatives , if permitted under ITB 13.4, will be evaluated as follows: Not applicable

1.4 Quantifiable Nonconformities and Omissions

Subject to ITB 14.2 and ITB 36.2, the evaluated cost of quantifiable nonconformities including omissions, is determined as follows:

Pursuant to ITB 31.3, the cost of all quantifiable nonmaterial nonconformities shall be evaluated, including omissions in Daywork where competitively priced but excluding omission of prices in the Bill of Quantities. The Employer will make its own assessment of the cost of any nonmaterial nonconformities and omissions for the purpose of ensuring fair comparison of Bids

1.5 Domestic Preference

If a margin of preference is provided for under ITB 35.1, the following procedure shall apply: Not applicable

1.6 Multiple Contracts

Not applicable

1.7 Operating and Maintenance Costs

Since the operating costs of the facilities being procured form a major part of the life cycle cost of the facilities, these costs will be evaluated and based on the performance characteristics of the Intake Pumping Station, Water Treatment Plant, Clear Water Pumping Station and equipment proposed to be furnished by the Bidder. Such costs shall be added to the bid price for evaluation.

For the purposes of this calculation, only those operating costs which may vary from bidder to bidder will be considered, based upon the details of the Intake Pumping Station, Water Treatment Plant, Clear Water Pumping Station and equipment which they propose to supply and install as a part of the Works. Such costs will be calculated during evaluation and will be added to the Bid Price to obtain the Evaluated Bid Price upon which the decision for award of contract will be based. Factors which will be used in calculating the differential operating costs include:

- (i) a period of 10 years initial operation of the Intake Pumping Station, Water Treatment Plant, Clear Water Pumping Station and facilities at its rated capacity/output following completion of commissioning and the Trial Run;
- (ii) the estimated total cost of the electricity required at and consumed by the Intake Pumping Station, Water Treatment Plant, Clear Water Pumping Station and equipment during this 10 year period based on:
 - a) the Demand Charges for the electricity based on the connected demand load which will be required to operate the facilities at its rated output;
 - b) a part of the facilities, based on calculations of the operating efficiencies and power consumption of all electrically-operated Intake Pumping Station, Water Treatment Plant, Clear Water Pumping Station and equipment at their rated outputs;
 - c) the rate of INR 8/KWH (for evaluation purpose) will be considered for electricity connected to and consumed by the Intake Pumping Station, Water Treatment Plant, Clear Water Pumping Station and facilities.
- (iii) the rate at ten (10) percent per annum shall be used to discount to present value all annual future costs calculated under (ii) above for the period specified in (i).

The Bidders are advised to the fact that the operating costs for low efficiency Intake Pumping Station, Water Treatment Plant, Clear Water Pumping Station and equipment will be substantially higher than the operating costs for high efficiency Intake Pumping Station, Water Treatment Plant and equipment, Clear Water Pumping Station and that the cost differential over the ten year period used in this calculation will, in all probability, greatly exceed any incremental capital cost savings which may be realized by offering lower efficiency Plant/Pumps. Bidders are encouraged to offer Intake Pumping Station, Water Treatment Plant, Clear Water Pumping Station and equipment which has high efficiencies at the specified operating conditions.

The differential power consumption shall be worked out on the basis of lowest power consumption among the bidders.

The Price Bid Evaluation shall be carried out with sum of Capital cost + Discounted O&M cost +Differential Power Consumption Loading (as applicable as per Guaranteed process power and excluding Provisional sum (PS)).The cost shall be considered for evaluation on net present worth basis. The cost quoted by the contractor will be reduced to net present worth by using following formula:

$$C = P (1 - (1/(1+r)^n))/r$$

Where

C = Cost quoted by the contractor

P = Net present worth

r = Rate of interest @ 10%

n = Number of years

Bidders shall state the power requirement for the plant in **TECH – 7 of Section 4A**: Technical Schedules.

1.8 Functional Guarantees of the facilities

Bidders shall state the functional guarantees in a format indicated in Technical Schedules of Section: 04 (e.g. performance, efficiency, consumption) of the proposed facilities in response to the Employer's Requirements. Intake Pumping Station, Water Treatment Plant, Clear Water Pumping Station and equipment offered shall have a minimum (or a maximum, as the case may be) level of functional guarantees specified in the Employer's Requirements to be considered responsive. Bids offering Intake Pumping Station, Water Treatment Plant, Clear Water Pumping Station and equipment with functional guarantees less (or more) than the minimum (or maximum) specified shall be rejected.

1.9 Work, services, facilities, etc., to be provided by the Employer

Where bids include for the undertaking of work or the provision of services or facilities by the Employer in excess of the provisions allowed for in the bidding documents, the Employer shall assess the costs of such additional work, services and/or facilities during the duration of the contract. Such costs shall be added to the bid price for evaluation.

2. Qualification

It is the legal entity or entities comprising the Bidder, and not the Bidder's parent companies, subsidiaries, or affiliates, that must satisfy the qualification criteria described below.

2.1 Eligibility

Criteria	Compliance Requirements			Documents
Requirement	Single Entity	Joint Venture		Submission Requirements
		All Partners Combined	Each Partner	

2.1.1 Nationality

Nationality in accordance with ITB Subclause 4.2.	must meet requirement	must meet requirement	must meet requirement	not applicable	Forms ELI - 1; ELI - 2 with attachments
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2.1.2 Conflict of Interest

No conflicts of interest in accordance with ITB Subclause 4.3.	must meet requirement	must meet requirement	must meet requirement	not applicable	Letter of Technical Bid
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2.1.3 ADB Eligibility

Not having been declared ineligible by ADB, as described in ITB Subclause 4.4.	must meet requirement	must meet requirement	must meet requirement	not applicable	Letter of Technical Bid
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2.1.4 Government-Owned Entity

Bidder required to meet conditions of ITB Subclause 4.5.	must meet requirement	must meet requirement	must meet requirement	not applicable	Forms ELI - 1; ELI - 2 with attachments
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2.1.5 United Nations Eligibility

Not having been excluded by an act of compliance with a UN Security Council resolution in accordance with ITB Subclause 4.7.	must meet requirement	must meet requirement	must meet requirement	not applicable	Letter of Technical Bid
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2.2 Pending Litigation

Pending litigation and arbitration criterion shall apply.

2.2.1 Pending Litigation and Arbitration

Criteria	Compliance Requirements			Documents	
Requirement	Single Entity	Joint Venture			Submission Requirements
		All Partners Combined	Each Partner	One Partner	
All pending litigation and arbitration, if any, shall be treated as resolved against the Bidder and so shall in total not represent more Fifty (50%) percent of the Bidder's net worth calculated as the difference between total assets and total liabilities.	must meet requirement by itself or as partner to past or existing Joint Venture	not applicable	must meet requirement by itself or as partner to past or existing Joint Venture	not applicable	Form LIT - 1

2.3 Financial Situation

2.3.1 Historical Financial Performance

Criteria	Compliance Requirements			Documents	
Requirement	Single Entity	Joint Venture			Submission Requirements
		All Partners Combined	Each Partner	One Partner	
Submission of audited financial statements or, if not required by the law of the Bidder's country, other financial statements acceptable to the Employer, for the last three (3) years to demonstrate the current soundness of the Bidder's financial position. As a minimum, the Bidder's net worth for the last year calculated as the difference between total assets and total liabilities should be positive.	must meet requirement	not applicable	must meet requirement	not applicable	Form FIN - 1 with attachments

2.3.2 Average Annual Construction Turnover

Criteria	Compliance Requirements			Documents	
Requirement	Single Entity	Joint Venture			Submission Requirements
		All Partners Combined	Each Partner	One Partner	
Minimum average annual construction turnover of INR 1,090 million or USD 16.89 million calculated as total certified payments received for contracts in progress or completed, within the last Three (3) years.	must meet requirement	must meet requirement	must meet 25% of the requirement	must meet 40% of the requirement	Form FIN - 2

Note: The present price level for turnover of the previous years' value shall be given weightage of 10% per year as follows:

SNo	Financial Year	Weightage
(i)	2017-18 (Audited, if available)	1.00
(ii)	2016-17	1.00
(iii)	2015-16	1.10
(iv)	2014-15	1.21

2.3.3 Financial Resources

Criteria Requirement	Compliance Requirements			Documents Submission Requirements	
	Single Entity	Joint Venture			
		All Partners Combined	Each Partner	One Partner	
<p>For Single Entities:</p> <p>The Bidder must demonstrate that its financial resources defined in FIN - 3, less its financial obligations for its current contract commitments defined in FIN - 4, meet or exceed the total requirement for the Subject Contract of INR 183 million or USD 2.84 million</p>	must meet requirement	not applicable	not applicable	not applicable	Form FIN – 3 and Form FIN – 4
<p>For Joint Ventures:</p> <p>(1) One partner must demonstrate that its financial resources defined in FIN - 3, less its financial obligations for its own current contract commitments defined in FIN - 4, meet or exceed its required share of at least 40% from the total requirement for the Subject Contract.</p> <p>AND</p>	not applicable	not applicable	not applicable	must meet requirement	Form FIN – 3 and Form FIN – 4
<p>(2) Each partner must demonstrate that its financial resources defined in FIN - 3, less its financial obligations for its own current contract commitments defined in FIN - 4, meet or exceed its required share of at least 25% from the total requirement for the Subject Contract.</p> <p>AND</p>	not applicable	not applicable	must meet requirement	not applicable	Form FIN – 3 and Form FIN – 4
<p>(3) The joint venture must demonstrate that the combined financial resources of all partners defined in FIN - 3, less all the partners' total financial obligations for the current contract commitments defined in FIN - 4, meet or exceed the total</p>	not applicable	must meet requirement	not applicable	not applicable	Form FIN – 3 and Form FIN – 4

requirement for the Subject Contract of INR 183 million or USD 2.84 million					
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2.4 Construction Experience

2.4.1 Contracts of Similar Size and Nature

Criteria	Compliance Requirements			Documents	
	Requirement	Single Entity	Joint Venture		
All Partners Combined			Each Partner	One Partner	Submission Requirements
<p>Participation in at least one contract that has been successfully or substantially completed within the last Seven (7) years and that is similar to the proposed works, where the value of the Bidder's participation exceeds INR 2029 million or USD 31.44 million.</p> <p>The similarity of the Bidder's participation shall be based on the physical size, nature of works, complexity, methods, technology or other characteristics as described in Section 6, Employer's Requirements.</p>	must meet requirement	not applicable	not applicable	must meet requirement	Form EXP - 1

Note:

- Experience of the bidder earned by him as the JV partner will be considered to the limit of its share in the completed works shown in that JV or consortium agreement.
- For present price level of cost of completed and commissioned works, the previous years' value shall be given weightage of 10% per year as follows:

S No	Calendar Year	Weightage
(i)	2018	1.00
(ii)	2017	1.00
(iii)	2016	1.10
(iv)	2015	1.21
(v)	2014	1.33
(vi)	2013	1.46
(vii)	2012	1.61
(viii)	2011	1.77

2.4.2 Construction Experience in Key Activities*

(May be complied with by specialist subcontractors wherever allowed. The employer shall require evidence of the subcontracting agreement from the bidder. A specialist subcontractor is a specialist enterprise engaged for highly specialized processes, which the main contractor cannot provide.

Criteria Requirement	Compliance Requirements			Documents Submission Requirements	
	Single Entity	Joint Venture			
		All Partners Combined	Each Partner	One Partner	
For the above or other contracts executed during the period stipulated in 2.4.1 above, a minimum construction experience in the following key activities:	must meet requirement	must meet requirement	not applicable	not applicable	Form EXP - 2
1. Design, Construction and Commissioning of Intake well of minimum 45 MLD capacity for Municipal Drinking Water application with minimum one year Operation and maintenance experience (beyond defect liability period) within the last seven years. <i>(This criterion should be met by the main bidder itself)</i>					
2. Dredging/maintaining the raw water approach channel/pipe laying by dredging for any project in the last seven years. <i>(This criteria can be met by the main bidder itself or the specialized sub-contractor)</i>					
3. Construction and installation of at least one 33/3.3kVA substation within the last seven years <i>(This criteria can be met by the main bidder itself or the specialized sub-contractor)</i>					
4. Design, Construction and Commissioning of one Clear Water Reservoir of minimum 7.0 ML capacity within the last seven years. <i>(This criteria should be met by the main bidder itself)</i>					

<p>5. Design, supply and erection of VT pump with HT motor of minimum discharging capacity 1000 m³/hr within the last seven years <i>(This criteria should be met by the main bidder itself)</i></p>					
<p>6. Providing, laying, jointing and commissioning of water main of various sizes/lengths as under within the last seven years: Diameter 400mm and above – 10,000m <i>(This criteria can be met by the main bidder itself or the specialized sub-contractor)</i></p>					
<p>7. Design, Construction and Commissioning of Water Treatment Plant of minimum output capacity 45 MLD having inclined Plate Settler/Tube settler and PLC including SCADA with minimum one year of operation and maintenance experience (beyond defect liability period) within the last seven years. <i>(This criteria should be met by the main bidder itself)</i></p>					
<p>8. Successfully carried out the Operation and Maintenance of a Water Supply Project having intake, water treatment plant and water pipe lines for at least 3 years (beyond defect liability period) in the last seven years <i>(This criteria can be met by the main bidder itself or the specialized sub-contractor)</i></p>					

**In the case of a joint venture bidder, at least one of the partners must have experience in the key activity if the bidder itself (not its subcontractor) will carry out the relevant activity.*

The Applicant will submit copy of work-orders and completion certificates from the client not below the rank of Superintending Engineer in support of all claimed experiences.

2.5 Subcontractors

Subcontractors or Manufacturers for the following major items of plant, material and services must meet the following minimum criteria, herein listed for that item. Failure to comply with this requirement will result in rejection of the subcontractor but not the Bidder.

Item No.	Description of Item	Minimum Criteria to be met	Documents Submission Requirements
1			Form EXP- 3
2			
3			
4			
5			

In the case of a Bidder who offers to supply and install major items of plant and material under the contract, which the Bidder did not manufacture or otherwise produce, the Bidder shall provide the Manufacturer's authorization, using the form provided in Section 4 (Bidding Forms), showing that the Bidder has been duly authorized by the Manufacturer or producer of the related plant and equipment or component to supply and install that item in the Employer's country. Failure to submit the Manufacturer's authorization at the first instance is considered a minor, nonmaterial omission and shall be subject to clarification. However, failure of the Bidder to submit the omitted authorization shall lead to rejection of the Subcontractor or Manufacturer of the item under evaluation in accordance with ITB 16, 17.

Section 4 - Bidding Forms

- Without Prequalification -

This Section contains the forms to be completed by the Bidder and submitted as part of its Bid.

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Letter of Technical Bid

-Note-

The bidder must accomplish the Letter of Technical Bid on its letterhead clearly showing the bidder's complete name and address.

Date:

NCB No.: BH/WS/02

Invitation for Bid No.: BUIDCo/BUDIP-2/NCB/02

Managing Director,
Bihar Urban Infrastructure Development Corporation Ltd. (BUIDCo),
#SFC Building, 2nd Floor, Daroga Prasad Rai Path,
R Block, Road No 2
Patna, Bihar
PIN Code: 800 001
India

We, the undersigned, declare that:

- (a) We have examined and have no reservations to the Bidding Documents, including Addenda issued in accordance with Instructions to Bidders (ITB) 8.
- (b) We offer to execute in conformity with the Bidding Documents the following Works: [. . .insert narrative . . .]
- (c) Our Bid consisting of the Technical Bid and the Price Bid shall be valid for a period of [. . .insert bid validity period as specified in ITB 18.1 of the BDS . . .] days from the date fixed for the bid submission deadline in accordance with the Bidding Documents, and it shall remain binding upon us and may be accepted at any time before the expiration of that period.
- (d) Our firm, including any Subcontractors or Suppliers or Manufacturers for any part of the Contract, have nationalities from eligible countries in accordance with ITB 4.2.
- (e) We, including any Subcontractors or Suppliers for any part of the contract, do not have any conflict of interest in accordance with ITB 4.3.
- (f) We are not participating, as a Bidder in more than one Bid in this bidding process in accordance with ITB 4.3(e), other than alternative offers submitted in accordance with ITB 13.
- (g) Our firm, its affiliates or subsidiaries, including any Subcontractors or Suppliers for any part of the contract, has not been declared ineligible by ADB, under the Employer's country laws or official regulations or by an act of compliance with a decision of the United Nations Security Council.

- (h) [We are not a government-owned enterprise] / [We are a government-owned enterprise but meet the requirements of ITB 4.5].¹

- (i) We agree to permit ADB or its representative to inspect our accounts and records and other documents relating to the bid submission and to have them audited by auditors appointed by ADB.

- (j) If our Bid is accepted, we commit to mobilizing key equipment and personnel in accordance with the requirements set forth in Section 6 (Employer’s Requirements) and our technical proposal, or as otherwise agreed with the Employer.

Name

In the capacity of

Signed

Duly authorized to sign the Bid for and on behalf of

Date

¹ Use one of the two options as appropriate.

Bid Security Bank Guarantee

..... *Bank's name, and address of issuing branch or office*²

Beneficiary: *Name and address of the employer*

Date:

Bid Security No.:

We have been informed that *name of the bidder*. (hereinafter called "the Bidder") has submitted to you its bid dated (hereinafter called "the Bid") for the execution of *name of contract* under Invitation for Bids No. ("the IFB").

Furthermore, we understand that, according to your conditions, bids must be supported by a bid guarantee.

At the request of the Bidder, we *name of bank*. hereby irrevocably undertake to pay you any sum or sums not exceeding in total an amount of *amount in words* (. *amount in figures*) upon receipt by us of your first demand in writing accompanied by a written statement stating that the Bidder is in breach of its obligation(s) under the bid conditions, because the Bidder

- (a) has withdrawn its Bid during the period of bid validity specified by the Bidder in the Letters of Technical and Price Bid; or
- (b) does not accept the correction of errors in accordance with the Instructions to Bidders (hereinafter "the ITB"); or
- (c) having been notified of the acceptance of its Bid by the Employer during the period of bid validity, (i) fails or refuses to execute the Contract Agreement, or (ii) fails or refuses to furnish the performance security, in accordance with the ITB, or (iii) fails or refuses to furnish a domestic preference security, if required.

This guarantee will expire (a) if the Bidder is the successful Bidder, upon our receipt of copies of the Contract Agreement signed by the Bidder and the Performance Security issued to you upon the instruction of the Bidder; or (b) if the Bidder is not the successful Bidder, upon the earlier of (i) our receipt of a copy of your notification to the Bidder of the name of the successful Bidder, or (ii) 28 days after the expiration of the Bidder's bid.

Consequently, any demand for payment under this guarantee must be received by us at the office on or before that date.

This guarantee is subject to the Uniform Rules for Demand Guarantees, ICC Publication No. 458.³

..... *Authorized signature(s) and bank's seal (where appropriate)*

-- Note --

In case of a joint venture, the bid security must be in the name of all partners to the joint venture that submits the bid.

² All italicized text is for use in preparing this form and shall be deleted from the final document.

³ Or 758 as applicable.

Bid-Securing Declaration

NOT APPLICABLE

Date: *[insert date (as day, month and year)]*

Bid No.: *[insert number of bidding process]*

Alternative No.: *[insert identification No if this is a bid for an alternative]*

To: *[insert complete name of the employer]*

We, the undersigned, declare that:

We understand that, according to your conditions, Bids must be supported by a Bid-Securing Declaration.

We accept that we will automatically be suspended from being eligible for bidding in any contract with the Borrower for the period of time of . . . *[insert number of years as indicated in ITB 19.2 of the BDS]* starting on the date that we receive a notification from the Employer, if we are in breach of our obligation(s) under the bid conditions, because we

- (a) have withdrawn our Bid during the period of bid validity specified in the Letters of Technical and Price Bid; or
- (b) do not accept the correction of errors in accordance with the Instructions to Bidders (hereinafter “the ITB”); or
- (c) having been notified of the acceptance of our Bid by the Employer during the period of bid validity, (i) fail or refuse to execute the Contract, if required; or (ii) fail or refuse to furnish the Performance Security, in accordance with the ITB; or (iii) fail or refuse to furnish a domestic preference security, if required.

We understand this Bid-Securing Declaration shall expire if we are not the successful Bidder, upon the earlier of (i) our receipt of your notification to us of the name of the successful Bidder; or (ii) 28 days after the expiration of our Bid.

Signed: *[insert signature of person whose name and capacity are shown]*

In the capacity of *[insert legal capacity of person signing the Bid-Securing Declaration]*

Name: *[insert complete name of person signing the Bid-Securing Declaration]*

Duly authorized to sign the bid for and on behalf of *[insert complete name of the bidder]*

Dated on _____ day of _____, _____ *[insert date of signing]*

Corporate Seal *[where appropriate]*

-- Note --

In case of a joint venture, the Bid-Securing Declaration must be in the name of all partners to the joint venture that submits the bid.

Technical Proposal

Personnel

Equipment

Site Organization

Method Statement

Mobilization Schedule

Construction Schedule

Personnel

Form PER – 1: Proposed Personnel

Bidder should provide the details of the proposed personnel and their experience record in the relevant Information Forms below for each candidate:

1.	Title of position*
	Name
2.	Title of position*
	Name
3.	Title of position*
	Name
4.	Title of position*
	Name
5.	Title of position*
	Name
6.	Title of position*
	Name
etc.	Title of position*
	Name

-- Note --

* As listed in Section 6 (Employer's Requirements).

Equipment

Form EQU: Equipment

The Bidder shall provide adequate information and details to demonstrate clearly that it has the capability to meet the equipment requirements indicated in Section 6 (Employer's Requirements), using the Forms below. A separate Form shall be prepared for each item of equipment listed, or for alternative equipment proposed by the Bidder.

Item of Equipment		
Equipment Information	Name of manufacturer	Model and power rating
	Capacity	Year of manufacture
Current Status	Current location	
	Details of current commitments	
Source	Indicate source of the equipment <input type="checkbox"/> Owned <input type="checkbox"/> Rented <input type="checkbox"/> Leased <input type="checkbox"/> Specially manufactured	

Omit the following information for equipment owned by the Bidder.

Owner	Name of owner	
	Address of owner	
	Telephone	Contact name and title
	Fax	Telex
Agreements	Details of rental / lease / manufacture agreements specific to the project	

Site Organization

Method Statement

Mobilization Schedule

Construction Schedule

Bidders Qualification

To establish its qualifications to perform the contract in accordance with Section 3 (Evaluation and Qualification Criteria) the Bidder shall provide the information requested in the corresponding Information Sheets included hereunder.

Form ELI - 1: Bidder's Information Sheet

Bidder's Information	
Bidder's legal name	
In case of a Joint Venture, legal name of each partner	
Bidder's country of constitution	
Bidder's year of constitution	
Bidder's legal address in country of constitution	
Bidder's authorized representative (name, address, telephone number(s), fax number(s), e-mail address)	
<p>Attached are copies of the following documents.</p> <p><input type="checkbox"/> 1. In case of a single entity, articles of incorporation or constitution of the legal entity named above, in accordance with ITB 4.1 and ITB 4.2.</p> <p><input type="checkbox"/> 2. Authorization to represent the firm or Joint Venture named above, in accordance with ITB 20.2.</p> <p><input type="checkbox"/> 3. In case of a Joint Venture, a letter of intent to form a Joint Venture or Joint Venture agreement, in accordance with ITB 4.1.</p> <p><input type="checkbox"/> 4. In case of a government-owned enterprise, any additional documents not covered under 1 above required to comply with ITB 4.5.</p>	

Form ELI - 2: Joint Venture Information Sheet

Each member of the Joint Venture and Specialist Subcontractor must fill out this form separately.

Joint Venture / Specialist Subcontractor Information	
Bidder's legal name	
Joint Venture Partner's or Specialist Subcontractor's legal name	
Joint Venture Partner's or Specialist Subcontractor's country of constitution	
Joint Venture Partner's or Specialist Subcontractor's year of constitution	
Joint Venture Partner's or Specialist Subcontractor's legal address in country of constitution	
Joint Venture Partner's or Specialist Subcontractor's authorized representative information (name, address, telephone number(s), fax number(s), e-mail address)	
Attached are copies of the following documents.	
<input type="checkbox"/> 1. Articles of incorporation or constitution of the legal entity named above, in accordance with ITB 4.1 and ITB 4.2.	
<input type="checkbox"/> 2. Authorization to represent the firm named above, in accordance with ITB 20.2.	
<input type="checkbox"/> 3. In the case of a government-owned enterprise, documents establishing legal and financial autonomy and compliance with commercial law, in accordance with ITB 4.5.	

A Specialist Subcontractor is a specialist enterprise engaged for highly specialized processes that cannot be provided by the main Contractor.

Form LIT - 1: Pending Litigation and Arbitration

Each Bidder must fill out this form if so required under Criterion 2.2 of Section 3 (Evaluation and Qualification Criteria) to describe any pending litigation or arbitration formally commenced against it.

In case of a Joint Venture, each Joint Venture Partner must fill out this form separately and provide the Joint Venture Partner's name below:

Joint Venture Partner: _____

Pending Litigation and Arbitration			
<p>Choose one of the following:</p> <p><input type="checkbox"/> No pending litigation and Arbitration.</p> <p><input type="checkbox"/> Below is a description of all pending litigation and Arbitration involving the Bidder (or each Joint Venture member if Bidder is a Joint Venture).</p>			
Year	Matter in Dispute	Value of Pending Claim in \$ Equivalent	Value of Pending Claim as a Percentage of Net Worth

- Note -

This form shall only be included if Criterion 2.2 of Section 3 (Evaluation and Qualification Criteria) is applicable.

Form FIN - 1: Historical Financial Performance

Each Bidder must fill out this form.

In case of a Joint Venture, each Joint Venture Partner must fill out this form separately and provide the Joint Venture Partner's name below:

Joint Venture Partner: _____

Financial Data for Previous Years [INR or US\$ Equivalent]		
Year 1:	Year 2:	Year __:

Information from Balance Sheet

Total Assets (TA)			
Total Liabilities (TL)			
Net Worth = TA – TL			
Current Assets (CA)			
Current Liabilities (CL)			
Working Capital = CA - CL			

Most Recent Working Capital		To be obtained for most recent year and carried forward to FIN - 3 Line 1; in case of Joint Ventures, to the corresponding Joint Venture Partner's FIN – 3.
------------------------------------	--	---

Information from Income Statement

Total Revenues			
Profits Before Taxes			
Profits After Taxes			

- Attached are copies of financial statements (balance sheets including all related notes and income statements) for the last 3 years, as indicated above, complying with the following conditions:
- Unless otherwise required by Section 3 of the Bidding Document, all such documents reflect the financial situation of the legal entity or entities comprising the Bidder and not the Bidder's parent companies, subsidiaries, or affiliates.
 - Historical financial statements must be audited by a certified accountant.
 - Historical financial statements must be complete, including all notes to the financial statements.
 - Historical financial statements must correspond to accounting periods already completed and audited (no statements for partial periods shall be requested or accepted).

Form FIN - 2: Average Annual Construction Turnover

Each Bidder must fill out this form.

The information supplied should be the Annual Turnover of the Bidder or each member of a Joint Venture in terms of the amounts billed to clients for each year for work in progress or completed, converted to INR or US dollars at the rate of exchange at the end of the period reported.

In case of a Joint Venture, each Joint Venture Partner must fill out this form separately and provide the Joint Venture Partner's name below:

Joint Venture Partner: _____

Annual Turnover Data for the Last 3 Years (Construction only)			
Year	Amount Currency	Exchange Rate	INR or US\$ Equivalent
Average Annual Construction Turnover			

Form FIN – 3: Availability of Financial Resources

Bidders must demonstrate sufficient financial resources, usually comprising of Working Capital supplemented by credit line statements or overdraft facilities and others to meet the Bidder's financial requirements for

- (a) its current contract commitments, and
- (b) the subject contract.

In case of a Joint Venture, each Joint Venture Partner must fill out this form separately and provide the Joint Venture Partner's name below:

Joint Venture Partner: _____

Financial Resources		
No.	Source of financing	Amount (INR or US\$ equivalent)
1	Working Capital (to be taken from FIN - 1)	
2	Credit Line ^a	
3	Other Financial Resources	
Total Available Financial Resources		

^a To be substantiated by a letter from the bank issuing the line of credit.

Form FIN- 4: Financial Requirements for Current Contract Commitments

Bidders (or each Joint Venture partner) should provide information on their current commitments on all contracts that have been awarded, or for which a letter of intent or acceptance has been received, or for contracts approaching completion, but for which an unqualified, full completion certificate has yet to be issued.

In case of a Joint Venture, each Joint Venture Partner must fill out this form separately and provide the Joint Venture Partner's name below:

Joint Venture Partner: _____

Current Contract Commitments						
No.	Name of Contract	Employer's Contact (Address, Tel, Fax)	Contract Completion Date	Outstanding Contract Value (X)^a	Remaining Contract Period in months (Y)^b	Monthly Financial Resources Requirement (X / Y)
1						
2						
3						
4						
Total Monthly Financial Requirement for Current Contract Commitments						INR or US\$ equivalent

^a Remaining outstanding contract values to be calculated from 28 days prior to the bid submission deadline (INR or US\$ equivalent based on the foreign exchange rate as of the same date).

^b Remaining contract period to be calculated from 28 days prior to bid submission deadline.

Form FIN - 5: Self-Assessment Tool for Bidder's Compliance to Financial Resources (Criterion 2.3.3 of Section 3)

This form requires the same information submitted in Forms FIN - 3 and FIN - 4. All conditions of "Available Financial Resources Net of CCC ≥ Requirement for the Subject Contract" must be satisfied to qualify.

Form FIN - 5A: For Single Entities

For Single Entities: (A)	Total Available Financial Resources from FIN – 3 (B)	Total Monthly Financial Requirement for Current Contract Commitments (CCC) from FIN – 4 (C)	Available Financial Resources Net of CCC D = (B - C)	Requirement for the Subject Contract (E)	Results: Yes or No [D must be greater than or equal to E] (F)
_____ (Name of Bidder)				

Form FIN - 5B: For Joint Ventures

For Joint Ventures: (A)	Total Available Financial Resources from FIN – 3 (B)	Total Monthly Financial Requirement for Current Contract Commitments (CCC) from FIN – 4 (C)	Available Financial Resources Net of CCC D = (B - C)	Requirement for the Subject Contract (E)	Results: Yes or No [D must be greater than or equal to E] (F)
One Partner:					
_____ (Name of Partner)				
Each Partner:					
_____ (Name of Partner 1)				
_____ (Name of Partner 2)				
_____ (Name of Partner 3)				
All partners combined	Σ D = Sum of available financial resources net of current contract commitments for all partners		Σ D = _____	

- Note -

Form FIN – 5 is made available for use by the bidder as a self-assessment tool, and by the employer as an evaluation work sheet, to determine compliance with the financial resources requirement as stated in 2.3.3. Failure to submit Form FIN - 5 by the Bidder shall not lead to bid rejection.

Form EXP – 1: Contracts of Similar Size and Nature

Fill out one (1) form per contract.

Contract of Similar Size and Nature		
Contract No of	Contract Identification	
Award Date	Completion Date	
Total Contract Amount	INR or US\$ equivalent	
If partner in a Joint Venture or subcontractor, specify participation of total contract amount	Percent of Total	Amount
Employer's name Address Telephone number Fax number E-mail		
Description of the Similarity in Accordance with Criterion 2.4.1 of Section 3 (Evaluation and Qualification Criteria)		
<p>Participation in at least one contract that has been successfully or substantially completed within the last seven (7) years and that is similar to the proposed works, where the value of the Bidder's participation exceeds INR 2029 million or equivalent USD</p> <p>The similarity of the Bidder's participation shall be based on the physical size, nature of works, complexity, methods, technology or other characteristics as described in Section 6, Employer's Requirements.</p>		

Form EXP - 2: Construction Experience in Key Activities

Fill out one (1) form per contract.

Contract with Similar Key Activities		
Contract No of	Contract Identification	
Award Date	Completion Date	
Total Contract Amount	\$	
If partner in a Joint Venture or subcontractor, specify participation of total contract amount	Percent of Total	Amount
Employer's name Address Telephone number Fax number E-mail		
Description of the Key Activities in Accordance with Criterion 2.4.2 of Section 3 (Evaluation and Qualification Criteria)		
For the above or other contracts executed during the period stipulated in 2.4.1 above, a minimum construction experience in the following key activities*:		
1. Design, Construction and Commissioning of Intake well of minimum 45 MLD capacity for Drinking Water application with minimum one year Operation and maintenance experience (beyond defect liability period) within the last seven years.		

<p>2. Dredging / maintaining the raw water approach channel by dredging for any project in the last seven years.</p>	
<p>3. Construction and installation of at least one 33/3.3kvA substation within the last seven years</p>	
<p>4. Design, Construction and Commissioning of one Clear Water Reservoir of minimum 7.0 ML capacity within the last seven years.</p>	
<p>5. Design, supply and erection of VT pump with HT motor of minimum discharging capacity 1000 m³/hr within the last seven years</p>	
<p>6. Providing, laying, jointing and commissioning of water main of various sizes/lengths as under within the last seven years: Diameter 400mm and above – 10,000m</p>	

<p>7. Design, Construction and Commissioning of Water Treatment Plant of minimum output capacity 45 MLD having inclined Plate Settler/Tube settler and PLC including SCADA with minimum one year of operation and maintenance experience (beyond defect liability period) within the last seven years.</p>	
<p>8. Successfully carried out the Operation and Maintenance of a Water Supply Project having intake, water treatment plant and water pipe line for at least 3 years (beyond defect liability period) in the last seven years</p>	

**In the case of a joint venture bidder, at least one of the partners must have experience in the key activity if the bidder itself (not its subcontractor) will carry out the relevant activity.*

The Applicant will submit copy of work-orders and completion certificates from the client not below the rank of Superintending Engineer in support of all claimed experiences.

Form EXP - 3: Subcontractors

Fill out one (1) form per contract.

Contract for the Major Items		
Contract No of	Contract Identification	
Award Date	Completion Date	
Role in Contract	<input type="checkbox"/> Contractor	<input type="checkbox"/> Management Contractor <input type="checkbox"/> Subcontractor
Total Contract Amount	\$	
If partner in a Joint Venture or subcontractor, specify participation of total contract amount	Percent of Total	Amount
Employer's name Address Telephone number Fax number E-mail		
Description of the Major Items in Accordance with Criterion 2.5 of Section 3 (Evaluation and Qualification Criteria)		

Schedules

TECHNICAL SCHEDULES

Form TECH – 1: Statement of Compliance with the Bidding Documents

Bidder shall provide a complete statement of any proposed deviations from the Conditions of Contract that are stipulated in the various Sections in Volume 1, General Requirements, giving reference to the Section Number and Clause Number, along with a description of the proposed deviation and the reason for proposing such deviation.

Section & Clause Number Reference	As Mentioned in Bid Document	As Proposed by the Bidder	Reasons for Deviation

The Bidder hereby certifies that the above mentioned deviations are the only deviations proposed to the various Sections of Volume 1, General Requirements, and that he agrees with all remaining conditions.

Form TECH – 2: Schedule of Subcontractors

[The bidder shall enter in this Schedule a list of the sections and appropriate value of the work for which he proposes to use subcontractors, together with the names and addresses of the proposed subcontractors. The bidder shall also enter a statement of similar works previously executed by the proposed subcontractors, including description, location and value of work, year completed, and name and address of the Employer/Employer's Representative. Notwithstanding such information the bidder, if awarded the contract, shall remain entirely and solely responsible for the satisfactory completion of the Works.]

Elements of Work	Approximate Value	Name and Address of Subcontractor	Statement of Similar Works Previously Executed within last 7 years

Form TECH – 3: Details of Sub-contractor

1. Name of Sub-contractor:
2. Year of Establishment/Registration:
3. Annual Turnover from construction activities in the last 3 years (attach balance sheets or any other authentic documents):
 - Financial Year 1 : 2016-2017
 - Financial Year 2 : 2015-2016
 - Financial Year 3 : 2014-2015

Similar Work Experience in past ten (10) years (attach work orders and completion certificates from clients):

4. Details (including estimated cost) of work proposed to be sub-contracted:
5. Technical/Managerial manpower proposed to be made available by the sub-contractor for the work (attach CV's including qualification and experience of personnel):
6. Materials & equipments proposed to be supplied by the Contractor to the sub-contractor.
7. Materials & equipments proposed to be made available by sub-contractor for the work:
8. Responsibility of sub-contractor for carrying out the work:
9. Quality Assurance / Quality Control System proposed to be established for the work:
10. Salient Features of MOU or Agreement between Contractor and the Sub-contractor (Copy of MOU or Agreement to be enclosed):

Form TECH – 4A: Commitment of the Specialist Sub-Contractor

[on Letter head of the Specialist sub Contractor]

To,
[The Bidder]

Sub: Rehabilitation, Construction, Operations, Maintenance and Management of Bhagalpur Water Supply Project 2 (BWSP2)

Sir/Madam,

We have studied the specification of the requirement of the Design, Construction, Operations, Maintenance and Management of Bhagalpur Water Supply Project 2 (BWSP2) as issued by BUIDCo. We find ourselves qualified to associate with the contract as Specialist Sub-contractor as per the stipulations of the tender document. We have furnished copies of the necessary certifications to you.

We commit ourselves to associate you to fulfill the responsibility of these works related to Design, Construction, Operations, Maintenance and Management of Bhagalpur Water Supply Project 2 (BWSP2) in case the contract is allocated to us.

With best wishes,

Authorized representative
(Specialist sub-contractor)

CC: Managing Director, BUIDCo

Form TECH – 4B: Manufacturer's Authorization

Date: *[insert date (as day, month and year) of bid submission]*

NCB No.: *[insert number of bidding process]*

To: *[insert complete name of the employer]*

WHEREAS

We *[insert complete name of the manufacturer or manufacturer's authorized agent]*, who are official manufacturers or agent authorized by the Manufacturer of *[insert type of goods manufactured]*, having factories at *[insert full address of manufacturer's factories]*, do hereby authorize *[insert complete name of the bidder]* to submit a bid the purpose of which is to provide the following goods, manufactured by us *[insert name and/or brief description of the goods]*, and to subsequently negotiate and sign the Contract.

We hereby extend our full guarantee and warranty in accordance with the General Conditions of Contract, with respect to the goods offered by the above firm.

Signed: *[insert signature(s) of authorized representative(s) of the manufacturer]*

Name: *[insert complete name(s) of authorized representative(s) of the manufacturer]*

Title: *[insert title]*

Duly authorized to sign this Authorization on behalf of *[insert complete name of the manufacturer]*

Dated on _____ day of _____, _____ *[insert date of signing]*

Form TECH – 5: WORK PLAN

The Contractors detailed work plan shall broadly have outputs not less than outputs mentioned in the Indicative work plan given at Clause 2.1 of Section VI: (Employer's Requirement).

S No	Important Physical Parameters	Estimated Quantity	Unit	Contract Period Months			
				Month-1	Month-2	Month-...

Form TECH – 6: Technical Parameters for Intake Pumping Station, Clear Water Pumping Station and Water Treatment Plant

Technical Parameters Proposed by the Bidder

The Bidder shall complete the following Schedules in their entirety to demonstrate their compliance with the technical requirements of the Project in sufficient detail so as to enable the Employer to determine the Bidder's responsiveness to the technical requirements of the Project.

Part 1: Mechanical Equipment

Raw Water Pumps

Bidder shall provide the following data on the pumps that are being offered:

Description	Unit	Particulars		
Country of Origin				
Make				
Model No.				
Column pipe dia.	mm			
Delivery elbow dia.	mm			
Suspension length excluding strainer	mm			
Weight	Kg			
Dynamic load of pump set	Kg			
Guaranteed Performance		With Impellers for		
		Minimum Head Duty Point	Average Head Duty Point	Maximum Head Duty Point
Capacity	M ³ /hr			
Total head (Bowl head - losses in column pipe, elbow- station losses)	MWC			
Losses in column pipe and elbow	MWC			
Station losses	MWC			
Bowl head	MWC			
Bowl efficiency	%			
Power input to bowl	kW			
Speed at 50 Hz	RPM			
Losses in transmission shaft	kW			
Thrust bearing losses	kW			
Power input to pump at duty point condition	kW			
Maximum power input within working range	kW			
Maximum power input to pump from shutoff to run off	kW			
Thrust bearing cooling water requirement, if any	M ³ /hr			

Line shaft bearing lubrication water requirement	M ³ /hr			
Any other important technical parameter	-			

Description	Particulars
Drawings / Graphs to be enclosed with Bid	Yes/No
<ul style="list-style-type: none"> Pump performance curves (head, power and efficiency, submergence vs flow) covering complete range of operation for minimum head, average head & maximum head duty points. 	
<ul style="list-style-type: none"> Pump Q-H curves superimposed on the system resistance for various combinations of pumping 	Yes/No
<ul style="list-style-type: none"> Dimensional general arrangement drawing of pump and motor 	Yes/No
<ul style="list-style-type: none"> Detailed cross-section of pump with materials of construction 	Yes/No
<ul style="list-style-type: none"> Detailed calculation of column pipe losses, elbow losses and station losses. 	Yes/No

Lubricating / Cooling Water System

General	Unit	RWPS, CWPS	
		Lubricating	Bearing Cooling (If required)
Make			
Model No.			
Capacity	M ³ /hr		
Total Head	M		
Efficiency	%		
Motor Rating	KW		
Any other technical parameter			

Bidder guarantees that the performance of each pump set shall comply with the figures given above and that the pumps will operate satisfactorily throughout the duty range.

Clear Water Pumps

Bidder shall provide the following data on the pumps that are being offered:

Description	Unit	Particulars
Country of Origin		
Make		
Model No.		
Column pipe dia	mm	
Delivery elbow dia.	mm	
Suspension length excluding strainer	mm	
Weight	Kg	
Dynamic load of pump set	Kg	

Guaranteed Performance		With Impellers for
------------------------	--	--------------------

		Minimum Head Duty Point	Average Head Duty Point	Maximum Head Duty Point
Capacity	M ³ /hr			
Total head (Bowl head - losses in column pipe, elbow- station losses)	MWC			
Losses in column pipe and elbow	MWC			
Station losses	MWC			
Bowl head	MWC			
Bowl efficiency	%			
Power input to bowl	kW			
Speed at 50 Hz	RPM			
Losses in transmission shaft	kW			
Thrust bearing losses	kW			
Power input to pump at duty point condition	kW			
Maximum power input within working range	kW			
Maximum power input to pump from shutoff to run off	kW			
Thrust bearing cooling water requirement, if any	M ³ /hr			
Line shaft bearing lubrication water requirement	M ³ /hr			
Any other important technical parameter	-			

Description	Particulars
Drawings / Graphs to be enclosed with Bid	
<ul style="list-style-type: none"> Pump performance curves (head, power and efficiency, NPSH vs flow) covering complete range of operation for final, intermediate & initial duty points. 	Yes/No
<ul style="list-style-type: none"> Pump Q-H curves superimposed on the system resistance for various combinations of pumping 	Yes/No
<ul style="list-style-type: none"> Pump torque-speed characteristic curve 	
<ul style="list-style-type: none"> Dimensional general arrangement drawing of pump and motor 	Yes/No
<ul style="list-style-type: none"> Detailed cross-section of pump with materials of construction 	Yes/No
<ul style="list-style-type: none"> Detailed calculation of station losses. 	Yes/No

Bidder guarantees that the performance of each pump set shall comply with the figures given above and that the pumps will operate satisfactorily throughout their entire operating range.

Part 2: Water Treatment Plant

Layout Plan

The Bidder is required to submit a block layout plan of the entire campus of Barari Head Works showing the location of various units of the Water Treatment Plant, clear water reservoir and pumping station, electrical sub-station, boundary walls and internal roadways, etc. The Bidder shall show the space reserved for the future expansion to 135 mld capacity of the treatment plant, pump stations and reservoir.

The block plan should show following details:

- Individual Units/ Buildings
- Staff Quarters / Contractors Office
- Roads
- Site Drainage
- Compound Wall & Gate
- Landscaping & Gardening

Check List

The Bidder shall submit the following information. He is required to opt for only one out of the five options permitted for the clarifiers and one of the two options of filters and provide information of the same.

1	Block layout plan provided	Yes/No
2	List of units provided	
3	Type of Clarifier provided Conventional clariflocculator or Flat bottom static sludge blanket clarifier or Flat bottom pulsating sludge blanket clarifier or Lamella clarifier or Tube settler or Solids recirculation type clarifier	
4	Type of Filter provided	
5	Head loss envisaged from Inlet Chamber FSL Clear Water Reservoir FSL LWL	
6	Type, capacity & duty of Sludge Dewatering units Centrifuge. The Bidder should provide the detailed technical parameters adopted for the option of dewatering unit design (if other than centrifuge).	

Description of Proposed Water Treatment Plant

The Bidder shall describe the proposed water treatment method, expected results and requirements for operations and maintenance in sufficient detail so that the Employer can assess the suitability of the Bidder's

Proposal. The Bidder should provide the detailed technical parameters adopted for the option of clarifier design (if other than conventional).

Proposed Layout of Water Treatment Plant and Campus

Bidder shall show all major components and dimensions, including provisions for future expansions.

Part 3: MS Pipeline and Specials

Description of Proposed Pipe Manufacturing Process:

The Bidder shall describe the proposed Pipe Manufacturing Process and expected results in sufficient details so that the Employer can assess the suitability of the Bidders proposal.

S No	Technical Schedule For Pipes	Bidder's Proposal
MS Pipe		
1	Proposed Type of Pipe	Longitudinally Welded/ Spirally Welded
2	Proposed Steel Plates Supplier(s)	
3	Number of production lines proposed to be installed for project	
4	Expected maximum output from each production line (in meters/day)	
5	Automatic MS plate/ coil bending plants A) Name of manufacturer B) Number of plants to be installed C) Output capacity of each plant per shift of 8 hrs. Maximum Average D) Other important technical parameters E) Number of shifts proposed for operation F) Number and type of personnel proposed for operating such plant G) System of routine repair H) System of breakdown maintenance and standby	

Description of Proposed Coating Process:

The Bidder shall describe the equipment proposed to be used and the process of coating of pipes and for joints in fields in sufficient details so that the Employer can assess the suitability of the Bidders proposal.

S No	Technical Schedule For Coating of Pipes and Joints	Bidder's Proposal
1	Name of manufacturer of proposed coating.	
2	Copy of ISO certificate enclosed	Yes/No
3	Automatic mobile coating plants A) Name of manufacturer B) Number of plants to be installed C) Output capacity of each plant per shift of 8 hrs. Maximum Average	

S No	Technical Schedule For Coating of Pipes and Joints	Bidder's Proposal
	D) Other important technical parameters E) Number of shifts proposed for operation F) Number and type of personnel proposed for operating such plant G) System of routine repair H) System of breakdown maintenance and standby	
4	Details of coating proposed and specification Layers A) Primer- Base Solvent Total Solids Weight/Litre Viscosity Color Compatibility B) Inner Wrap Total Thickness Backing Thickness Adhesive Thickness Tensile Strength Elongation Adhesion to Primed steel C) Outer Wrap Total Thickness Backing Thickness Adhesive Thickness Tensile Strength Elongation D) Installation System Properties Percentage Overlap Installed Thickness Adhesion to Pipe Surface Dielectric Strength Volume Resistivity Moisture Vapor Transmission Cathodic Disbondment E) Temperature Range Normal Application Normal Service F) Surface Preparation Outer Surface Inner Surface G) Application Procedure H) Overlap	

S No	Technical Schedule For Coating of Pipes and Joints	Bidder's Proposal
	Longitudinal Circular I) Repair Procedure J) Cut back recommended by manufacturer K) Type of coating proposed for joints by manufacturer L) Application procedure for coating of pipe joint M) Name of manufacturer of coating for joint	
9	Certification from at least two clients who have used the proposed coating manufactured by the proposed supplier stating the performance after minimum 5 years	
10	Certification of the manufacturer regarding the specification and recommended coating.	
11	Acceptance of manufacturer for supply of required quantity & supervising the coating at site etc.	

Description of Proposed Process for Internal Lining of Pipes, Fittings and Joints:

The Bidder shall describe the equipment proposed to be used and the process of internal lining of pipes and for joints in the field in sufficient detail so that the Employer can assess the suitability of the Bidder's proposal.

S No	Technical Schedule For Internal Lining of Pipes, Fittings and Joints	Bidder's Proposal
1	Proposed Process for lining	
2	Details of equipment proposed to be used	
3	Number of production lines proposed to be installed for project	
4	Expected maximum output from each production line (meters/day)	
5	Automatic Lining plants A) Name of manufacturer B) Number of plants to be installed C) Output capacity of each plant per shift of 8 hrs. Maximum Average D) Other important technical parameters E) Number of shifts proposed for operation F) Number and type of personnel proposed for operating such plant G) System of routine repair H) System of breakdown maintenance and standby	

Part 4: Electrical Equipment**Transformers**

S No	Description	Unit	Particulars	
			RWPS	CWPS
A	Transformer			
1.	Rated Power	kVA		
2.	No load loss at rated voltage and frequency	kW		
3.	Full load loss at Principle tapping corrected to 75°C	kW		
4.	Impedance voltage	%		
5.	Efficiency at rated voltage, frequency and full load and at: a) Unity power factor b) 0.8 p.f. lagging	% %		
6	Other important Technical Parameters			
7	Make/ Name of Manufacturer			
The above data shall be furnished separately for each rating/ size of the transformer.				

Induction Motor

S No	Description	Unit	Particulars	
			RWPS	CWPS
1.	Rating	kW		
2.	Operating Voltage	KV		
3.	Starting torque in % of full load torque	%		
4.	Breakdown torque in % of full load torque	%		
5.	Locked rotor withstand time			
6.	Efficiency a) Full load b) 3/4 load c) 1/2 load	%		
7.	Power factor a) Full load b) 3/4 load c) 1/2 load	%		
8.	Starting time at minimum starting voltage (with/ without load)			

S No	Description	Unit	Particulars	
9.	Number of starts permissible (hot/cold)			
10.	Other important Technical Parameters			
11.	Make/ Name of Manufacturer Name of Manufacturer			
The above data shall be furnished separately for each rating / size of motor.				

Neutral Grounding Resistor

S No	Description	Unit	Particulars	
1	Temperature rise over the specified design ambient temperature of 50°C	°C		
2	Ohmic value of resistor for rated current of 1000A and 10 sec duration	ohm		
3	Other important Technical Parameters			
4	Make/ Name of Manufacturer			

MV Capacitor

S No	Description	Unit	Particulars	
A	Capacitor		RWPS	CWPS
1	Rated output of capacitor & reactor	kVAR		
2	Temperature rise over the specified design ambient temperature of 50°C	°C		
3	Capacitor & reactor losses	W		
4	Other important Technical Parameters			
5	Make/ Name of Manufacturer			
The above data shall be furnished separately for each rating / size of capacitors.				

LV Power Capacitors with Control Panel

S No	Description	Unit	Particulars	
A	Capacitor Bank		RWPS	CWPS
1	Rated output	kVAR		
B	Capacitor Control Panel			
1	Type of Automatic Power Factor Correction (APFC) relay			

S No	Description	Unit	Particulars	
C	Other important Technical Parameters			
D	Make/ Name of Manufacturer			
The above data shall be furnished separately for each rating / size of capacitors.				

Battery and Battery Charger

S No	Description	Unit	Particulars	
A	Battery		RWPS	CWPS
1	Battery type and capacity	AH		
B	Battery Charger			
1	Maximum charging current: a) Float charging b) Boost charging	A A		
2	Voltage regulation	%		
3	Charger efficiency and power factor at: a) Rated load b) 50% load	% %		
4	Ripple Content at rated load: a) with battery connected b) without battery connected	% %		
5	Other important Technical Parameters			
6	Make/ Name of Manufacturer			

Part 5: Automation Instrumentation and Control**Flow Meters****Ultrasonic Type Flow meter for Raw Water Pumping Main**

1	Quantity	
2	Ranges	
3	Panel mounted Flow indicator & integrators (Required)	
4	Other important Technical Parameters	
5	Make/ Name of Manufacturer	

Full-bore Electromagnetic Flow Meter for Raw/Clear Water Pumping Main

1	Quantity	
2	Ranges	
3	Panel mounted Flow indicator & integrators (Required)	
4	Other important Technical Parameters	
5	Make/ Name of Manufacturer	

Flow Meter for Filter Backwash

1	Range	
2	Size	
3	Quantity	
4	Other important Technical Parameters	
5	Make/ Name of Manufacturer	

Ultrasonic Type Flow Meter for Open Channel

1	Range	
2	Quantity along with application / locations.	
3	Other important Technical Parameters	
4	Make/ Name of Manufacturer	

Radar Type Level Transmitter

1	Ranges	
2	Quantity along with application / locations.	
3	Other important Technical Parameters	
4	Make/ Name of Manufacturer	

On-Line Turbidity Analyzer

1	Range	
2	Other important Technical Parameters	
3	Make/ Name of Manufacturer	

On-Line Residual Chlorine Analyzer

1	Accuracy of measurement	
2	Range	
3	Other important Technical Parameters	
4	Make/ Name of Manufacturer	

Form TECH – 8: GROSS POWER REQUIREMENTS

Guaranteed Gross Power requirement during Performance Guarantee Tests and Operation, Maintenance & Management Period for Complete Plant and Facilities.

Treated Water Output (MLD)	Guaranteed Power kWH per Day
10	
20	
30	
40	
50	
60	
70	
80	
90	

We confirm that the power consumption stated in the above matrix is guaranteed maximum.

ANNEXURE to TECHNICAL SCHEDULES

(To be completed by the Bidder)

1.0 Introduction

Technical Schedules cover only the few technical details of equipment offered by the bidder.

1.1 Vertical Pump (Raw Water)

S No	Particulars	Units	Particulars as specified	Particulars to be provided by the contractor
1.	Rated Discharge (Q)	Cum/Hr.	1027	
2.	Design head (h)	M	29	
3.	Rated speed			
	a) Pump	Rpm	980	
	b) Motor (Synchronous)	Rpm	1000	
4.	Pump Output (1) x (2) / 102	kW		
5.	Head loss in column assembly and discharge head	M		
6.	Head loss at suction strainer	M		
7.	Head loss at suction bell mouth	M		
8.	Bowl assembly head (H) = (2) + (5) + (6) + (7)	M		
9.	Bowl assembly output (1) x (8)/ 102	kW		
10.	Bowl efficiency	%		
11.	Input to bowl assembly (9)/ (10) x 100	kW		
12.	Power loss in thrust bearing	kW		
13.	Power loss in the line shaft bearing, stuffing box, flexible coupling and shaft losses.	kW		
14.	Input to pump (11) + (12) + (13)	kW		
15.	Pump efficiency (4) / (14)		Minimum 80%	
16.	Motor efficiency at load corresponding to rated conditions.	%	Minimum 90%	
17.	Input to motor (14)/ (16) x 100			
18.	Guaranteed overall efficiency of pump-motor set (4)/ (17) x 100	%		
19.	NPSH required at operating head corresponding to highest water level with single pump operation	M		
20.	Minimum Submergence required at operating head corresponding lowest water level with single	M		

S No	Particulars	Units	Particulars as specified	Particulars to be provided by the contractor
	pump operation			
21.	Life of thrust bearing (calculations giving maximum hydraulic thrust encountered, capacity of thrust bearing etc. shall be enclosed to substantiate life of thrust bearing)	Hrs.	40,000	
22.	Material of Construction			
	Bell Mouth		Cast Iron: IS 210 Gr. FG 200	
	Bowl, Impeller Guide		Cast Iron: IS 210 Gr. FG 200	
	Impeller		Stainless Steel: ASTM A 351 CF8M	
	Shafts		Stainless Steel: AISI 410/416	
	Shaft Sleeve with surface hardening of 350 BHN- min.		Stainless Steel: AISI 410	
	Transmission Shaft Couplings		Stainless Steel: AISI 410 / 431	
	Sleeve for Bearing		Stainless Steel: AISI 304	
	Suction Strainer		Stainless Steel: AISI 304	

The pump shall be suitable for raw water.

1.2 Vertical Pump (Settle Water)

S No	Particulars	Units	Particulars as specified	Particulars to be provided by the contractor
1.	Rated Discharge (Q)	Cum/Hr.	1027	
2.	Design head (h)	M	8	
3.	Rated speed			
	a) Pump	Rpm	730	
	b) Motor (Synchronous)	Rpm	750	
4.	Pump Output (1) x (2) / 102	kW		
5.	Head loss in column assembly and discharge head	M		
6.	Head loss at suction strainer	M		
7.	Head loss at suction bell mouth	M		
8.	Bowl assembly head (H) = (2) + (5) + (6) + (7)	M		
9.	Bowl assembly output (1) x (8)/ 102	kW		

S No	Particulars	Units	Particulars as specified	Particulars to be provided by the contractor
10.	Bowl efficiency	%		
11.	Input to bowl assembly (9)/ (10) x 100	kW		
12.	Power loss in thrust bearing	kW		
13.	Power loss in the line shaft bearing, stuffing box, flexible coupling and shaft losses.	kW		
14.	Input to pump (11) + (12) + (13)	kW		
15.	Pump efficiency (4) / (14)		Minimum 80%	
16.	Motor efficiency at load corresponding to rated conditions.	%	Minimum 90%	
17.	Input to motor (14)/ (16) x 100			
18.	Guaranteed overall efficiency of pump-motor set (4)/ (17) x 100	%		
19.	NPSH required at operating head corresponding to highest water level with single pump operation	M		
20.	Minimum Submergence required at operating head corresponding lowest water level with single pump operation	M		
21.	Life of thrust bearing (calculations giving maximum hydraulic thrust encountered, capacity of thrust bearing etc. shall be enclosed to substantiate life of thrust bearing)	Hrs.	40,000	
22.	Material of Construction			
	Bell Mouth		Cast Iron: IS 210 Gr. FG 200	
	Bowl, Impeller Guide		Cast Iron: IS 210 Gr. FG 200	
	Impeller		Stainless Steel: ASTM A 351 CF8M	
	Shafts		Stainless Steel: AISI 410/416	
	Shaft Sleeve with surface hardening of 350 BHN- min.		Stainless Steel: AISI 410	
	Transmission Shaft Couplings		Stainless Steel: AISI 410 / 431	
	Sleeve for Bearing		Stainless Steel: AISI 304	

S No	Particulars	Units	Particulars as specified	Particulars to be provided by the contractor
	Suction Strainer		Stainless Steel: AISI 304	

The pump shall be suitable for settled raw water.

1.3 Vertical Pump (Clear Water)

S No	Particulars	Units	Particulars as specified	Particulars to be provided by the contractor
1.	Rated Discharge (Q)	Cum/Hr.	978	
2.	Design head (h)	M	38	
3.	Rated speed			
	a) Pump	Rpm	980	
	b) Motor (Synchronous)	Rpm	1000	
4.	Pump Output (1) x (2) / 102	kW		
5.	Head loss in column assembly and discharge head	M		
6.	Head loss at suction strainer	M		
7.	Head loss at suction bell mouth	M		
8.	Bowl assembly head (H) = (2) + (5) + (6) + (7)	M		
9.	Bowl assembly output (1) x (8) / 102	kW		
10.	Bowl efficiency	%		
11.	Input to bowl assembly (9) / (10) x 100	kW		
12.	Power loss in thrust bearing	kW		
13.	Power loss in the line shaft bearing, stuffing box, flexible coupling and shaft losses.	kW		
14.	Input to pump (11) + (12) + (13)	kW		
15.	Pump efficiency (4) / (14)		Minimum 80%	
16.	Motor efficiency at load corresponding to rated conditions.	%	Minimum 90%	
17.	Input to motor (14) / (16) x 100			
18.	Guaranteed overall efficiency of pump-motor set (4) / (17) x 100	%		
19.	NPSH required at operating head corresponding to highest water level with single pump operation	M		
20.	Minimum Submergence required at operating head corresponding lowest water level with single	M		

S No	Particulars	Units	Particulars as specified	Particulars to be provided by the contractor
	pump operation			
21.	Life of thrust bearing (calculations giving maximum hydraulic thrust encountered, capacity of thrust bearing etc. shall be enclosed to substantiate life of thrust bearing)	Hrs.	40,000	
22.	Material of Construction			
	Bell Mouth		Cast Iron: IS 210 Gr. FG 200	
	Bowl, Impeller Guide		Cast Iron: IS 210 Gr. FG 200	
	Impeller		Stainless Steel: ASTM A 351 CF8M	
	Shafts		Stainless Steel: AISI 410/416	
	Shaft Sleeve with surface hardening of 350 BHN- min.		Stainless Steel: AISI 410	
	Transmission Shaft Couplings		Stainless Steel: AISI 410 / 431	
	Sleeve for Bearing		Stainless Steel: AISI 304	
	Suction Strainer		Stainless Steel: AISI 304	

The pump shall be suitable for Clear water.

1.4 433V Motor Schedule (Raw Water Pumps)

S No	Particulars	Units	Particulars as specified	Particulars to be provided by the contractor
1.	Pump head at which maximum power is required within specified working range of pump head (As specified in Section – 6)	M		
2.	Corresponding discharge	LPS		
3.	Corresponding pump efficiency	%		
4.	Maximum power required by pump $\frac{\{(1) \times (2)\}}{102} \times \frac{100}{(3)}$	kW		
5.	Margin at 5 % over maximum power required by pump. (4) x 0.05	kW		
6.	Margin at 10 % over power required by pump at duty point	kW		

S No	Particulars	Units	Particulars as specified	Particulars to be provided by the contractor
7.	Minimum motor rating required	kW		
8.	Rating of motor offered	kW		
9.	Efficiency		Minimum Efficiency Category – IE-2	

1.5 433V Motor Schedule (Settle Water Pumps)

S No	Particulars	Units	Particulars as specified	Particulars to be provided by the contractor
1.	Pump head at which maximum power is required within specified working range of pump head (As specified in Section – 6)	M		
2.	Corresponding discharge	LPS		
3.	Corresponding pump efficiency	%		
4.	Maximum power required by pump $\frac{\{(1) \times (2)\}}{102} \times \frac{100}{(3)}$	kW		
5.	Margin at 5 % over maximum power required by pump. (4) x 0.05	kW		
6.	Margin at 10 % over power required by pump at duty point	kW		
7.	Minimum motor rating required	kW		
8.	Rating of motor offered	kW		
9.	Efficiency		Minimum Efficiency Category – IE-2	

1.6 433V Motor Schedule (Clear Water Pumps)

S No	Particulars	Units	Particulars as specified	Particulars to be provided by the contractor
1.	Pump head at which maximum power is required within specified working range of pump head (As specified in Section – 6)	M		
2.	Corresponding discharge	LPS		
3.	Corresponding pump efficiency	%		
4.	Maximum power required by	kW		

S No	Particulars	Units	Particulars as specified	Particulars to be provided by the contractor
	pump $\frac{\{(1) \times (2)\}}{102} \times \frac{100}{(3)}$			
5.	Margin at 5 % over maximum power required by pump. (4) x 0.05	kW		
6.	Margin at 10 % over power required by pump at duty point	kW		
7.	Minimum motor rating required	kW		
8.	Rating of motor offered	kW		
9.	Efficiency		Minimum Efficiency Category – IE-2	

1.7 33/0.433 KV Transformer (At Raw Water Intake)

S No	Particulars	Units	Particulars as specified	Particulars to be provided by the contractor
1	Make			
2	Applicable standards			
3	Type/Designation			
4	Full load rating	MVA	1.0	
	Rated no- load voltages HV	kV	33	
5	LV	kV	0.433	
6	Guaranteed impedance voltage at rated current for all taps	%		
7	Guaranteed efficiency at 75 Deg C at unity P.F at full load	%		
8	External short circuit withstand capacity	MVA		
	Tappings on winding			
	On-load/off circuit taps			
9	Full power tapping range	%		
10	OFF load tap changer			
(a)	Make			
(b)	Type designation			
11	Minimum clearance height for lifting core and windings from tank	mm		
12	Bushings:			
(a)	Rated voltage class	kV		
(b)	Rated current	A		
(c)	Free space required at top for removal	mm		
13	Guaranteed no load losses (core loss and dielectric loss) at 100%	kW		

S No	Particulars	Units	Particulars as specified	Particulars to be provided by the contractor
	rated voltage and frequency			
14	Guaranteed no-load current:			
(a)	When excited from LV side at 100% rated voltage	A		
(b)	When excited from LV side at 110% rated voltage	A		
15	Wheels:			
(a)	Plain/flanged		Flanged	
(b)	Unidirectional/bidirectional		Bidirectional	
(c)	Quantity			
(d)	Gauge (s)			
16	Vacuum withstand capability:	mm of Hg.	Minimum 760mm of Mercury	
17	Weights			
(a)	Core winding assembly	Kg		
(b)	Oil	Kg		
(c)	Tank, Coolers and fittings			
(d)	Total	Kg		
(e)	Untanking weight	Kg		
18	Shipping section			
19	Size of largest package (LxBxH)	mm		
20	Weight of the largest package	Ton		
21	Hydraulic jack			
(a)	Make			
(b)	Type			
(c)	Number			
(d)	Capacity			
22	General outline drawing enclosed with the tender showing the transformer with all its fittings and accessories in plan, front and side elevations and other details	Yes/ No	Yes	
23	Whether GA Drawings/ Documents/ Literature / Catalogues etc. as per Volume-2, Part-2 enclosed with the bid	Yes/ No	Yes	
24	Whether copies of type test certificates/ report as per the latest standards enclosed with the bid	Yes/ No	Yes	
25	Whether copies of user's certificates enclosed with bid	Yes/ No	Yes	
26	Whether all routine/type/acceptance tests will be carried out as specified (If not,	Yes/ No	Yes	

S No	Particulars	Units	Particulars as specified	Particulars to be provided by the contractor
	furnish list)			

1.8 33/0.433 KV Transformer (At WTP)

S No	Particulars	Units	Particulars as specified	Particulars to be provided by the contractor
1	Make			
2	Applicable standards			
3	Type/Designation			
4	Full load rating	MVA	1.6	
	Rated no- load voltages HV	kV	33	
5	LV	kV	0.433	
6	Guaranteed impedance voltage at rated current for all taps	%		
7	Guaranteed efficiency at 75 Deg C at unity P.F at full load	%		
8	External short circuit withstand capacity	MVA		
	Tappings on winding			
	On-load/off circuit taps			
9	Full power tapping range	%		
10	OFF load tap changer			
(a)	Make			
(b)	Type designation			
11	Minimum clearance height for lifting core and windings from tank	mm		
12	Bushings:			
(a)	Rated voltage class	kV		
(b)	Rated current	A		
(c)	Free space required at top for removal	mm		
13	Guaranteed no load losses (core loss and dielectric loss) at 100% rated voltage and frequency	kW		
14	Guaranteed no-load current:			
(a)	When excited from LV side at 100% rated voltage	A		
(b)	When excited from LV side at 110% rated voltage	A		
15	Wheels:			
(a)	Plain/flanged		Flanged	
(b)	Unidirectional/bidirectional		Bidirectional	
(c)	Quantity			

S No	Particulars	Units	Particulars as specified	Particulars to be provided by the contractor
(d)	Gauge (s)			
16	Vacuum withstand capability:	mm of Hg.	Minimum 760mm of Mercury	
17	Weights			
(a)	Core winding assembly	Kg		
(b)	Oil	Kg		
(c)	Tank, Coolers and fittings			
(d)	Total	Kg		
(e)	Untanking weight	Kg		
18	Shipping section			
19	Size of largest package (L x B x H)	mm		
20	Weight of the largest package	Ton		
21	Hydraulic jack			
(a)	Make			
(b)	Type			
(c)	Number			
(d)	Capacity			
22	General outline drawing enclosed with the tender showing the transformer with all its fittings and accessories in plan, front and side elevations and other details	Yes/ No	Yes	
23	Whether GA Drawings/ Documents/ Literature / Catalogues etc. as per Volume-2, Part-2 enclosed with the bid	Yes/ No	Yes	
24	Whether copies of type test certificates/ report as per the latest standards enclosed with the bid	Yes/ No	Yes	
25	Whether copies of user's certificates enclosed with bid	Yes/ No	Yes	
26	Whether all routine/type/acceptance tests will be carried out as specified (If not, furnish list)	Yes/ No	Yes	

1.9 Starter (At Raw Water Intake)

S No	Particulars	Units	Particulars as specified	Particulars to be provided by the contractor
1	Type of Starter		Soft	
2	Name of Manufacturer			
3	Rating	kW		
4	Protection required		Minimum Over	

S No	Particulars	Units	Particulars as specified	Particulars to be provided by the contractor
			current, under voltage, single phasing, Phase reversal, Electronic Timer.	

1.10 Starter (Settle Water Pumping Station)

S No	Particulars	Units	Particulars as specified	Particulars to be provided by the contractor
1	Type of Starter		ASD	
2	Name of Manufacturer			
3	Rating	kW		
4	Protection required		Minimum Over current, under voltage, single phasing, Phase reversal, Electronic Timer.	

1.11 Starter (Clear Water Pumping Station)

S No	Particulars	Units	Particulars as specified	Particulars to be provided by the contractor
1	Type of Starter		Soft	
2	Name of Manufacturer			
3	Rating	kW		
4	Protection required		Minimum Over current, under voltage, single phasing, Phase reversal, Electronic Timer.	

Section 4 - Bidding Forms**4B-Price Schedules**

This Section contains the forms which are to be completed by the Bidder and submitted as part of his Bid.

Table of Forms

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Letter of Price Bid

Date:

NCB No.: BH/WS/02

Invitation for Bid No.: BUIDCo/BUDIP-2/NCB/02

To:

Managing Director,
Bihar Urban Infrastructure Development Corporation Ltd. (BUIDCo),
#SFC Building, 2nd Floor, Daroga Prasad Rai Path,
R Block, Road No 2
Patna, Bihar
PIN Code: 800 001
India

We, the undersigned, declare that:

- (a) We have examined and have no reservations to the Bidding Documents, including Addenda issued in accordance with Instructions to Bidders (ITB) 8;
- (b) We offer to execute in conformity with the Bidding Documents and the Technical Bid submitted for the following Works:
Improvement of Water Supply System in Bhagalpur Municipal Corporation (BH/WS/02)
- (c) The total price of our Bid, excluding any discounts offered in item (d) below is:
.....
- (d) The discounts offered and the methodology for their application are:
.....
.....
- (e) Our Bid shall be valid for a period of 120 days from the date fixed for the bid submission deadline in accordance with the Bidding Documents, and it shall remain binding upon us and may be accepted at any time before the expiration of that period;
- (f) If our Bid is accepted, we commit to obtain a performance security in accordance with the Bidding Documents;
- (g) We have paid, or will pay the following commissions, gratuities, or fees with respect to the bidding process or execution of the Contract: *

Name of Recipient	Address	Reason	Amount
.....
.....

- (h) We understand that this bid, together with your written acceptance thereof included in your notification of award, shall constitute a binding contract between us, until a formal contract is prepared and executed; and
- (i) We understand that you are not bound to accept the lowest evaluated bid or any other bid that you may receive.
- (j) We agree to permit ADB or its representative to inspect our accounts and records and other documents relating to the bid submission and to have them audited by auditors appointed by ADB.

Name

In the capacity of

Signed

Duly authorized to sign the Bid for and on behalf of

Date

* If none has been paid or is to be paid, indicate "none".

Schedules

Schedule of Payment Currencies

For*insert name of Section of the Works*

Separate tables may be required if the various sections of the Works (or of the Price Schedules) will have substantially different foreign and local currency requirements. In such a case, the Employer should prepare separate tables for each Section of the Works.

	A	B	C	D
Name of Payment Currency	Amount of Currency	Rate of Exchange to Local Currency	Local Currency Equivalent $C = A \times B$	Percentage of Net Bid Price (NBP) $\frac{100 \times C}{NBP}$
Local currency		1.00		
Foreign Currency #1				
Foreign Currency #2				
Foreign Currency #				
Net Bid Price				100.00
Provisional Sums Expressed in Local Currency	50,000,000	1.00		
BID PRICE				

- Note -

The rates of exchange shall be the selling rates 28 days prior to the deadline for submission of bids published by the source specified in BDS 15.

Tables of Adjustment Data**Tables of Adjustment Data for Payment of Design Build Works****Table A.1 - Local Currency:**

Index Code	Index Description	Source of Index	Base Value and Date	Amount	Weighting
a	Nonadjustable	—	—	—	0.15
b	Labour Component (L):	Consumer Price Index for labour issued by Reserve Bank of India	Indices applicable on 28 days prior to deadline for bid submission	As per cost of work	0.25
c	Cement (C)	Wholesale Price Index for grey cement (OPC) issued by Reserve Bank of India	Indices applicable on 28 days prior to deadline for bid submission	As per cost of work	0.05
d	Bitumen (B)	Wholesale Price Index for Bitumen issued by Mathura Refinery	Indices applicable on 28 days prior to deadline for bid submission	As per cost of work	0.05
e	Ferrous Metal (S)	Wholesale Price Index for ferrous metal issued by Reserve Bank of India	Indices applicable on 28 days prior to deadline for bid submission	As per cost of work	0.10
f	Pipes and specials	Wholesale Price Index for resin (HDPE / PVC pipes) issued by Reserve Bank of India	Indices applicable on 28 days prior to deadline for bid submission	As per cost of work	0.20
g	Pumps and Machinery and Spares (PM)	Wholesale Price Index for Construction machinery issued by Reserve Bank of India	Indices applicable on 28 days prior to deadline for bid submission	As per cost of work	0.05
h	Other Materials (O)	Wholesale Price Index for all commodities issued by Reserve Bank of India	Indices applicable on 28 days prior to deadline for bid submission	As per cost of work	0.15
				Total	1.00

Table B.1 - Foreign Currency

Foreign currency payments, if any, will be converted into the local currency (INR) at the selling exchange rate, published by Reserve Bank of India, on the last date of quarter for which the index is applicable.

Tables of Adjustment Data for Payment for Operation Service:**Table A.2 – Local Currency**

Index Code	Index Description	Source of Index	Base Value and Date	Amount	Weighting
a	Nonadjustable	—	—	—	0.15
b	Material Component:	Wholesale Price Index for all commodities issued by Reserve Bank of India	Indices applicable on 28 days prior to deadline for bid submission	As per cost of work	0.15
c	Labour Component:	Consumer Price Index for Industrial workers issued by Reserve Bank of India	Indices applicable on 28 days prior to deadline for bid submission	As per cost of work	0.70
				Total	1.00

Table B.2 - Foreign Currency

Foreign currency payments, if any, will be converted into the local currency (INR) at the selling exchange rate, published by Reserve Bank of India, on the last date of quarter for which the index is applicable.

Price Schedules

Content

The Price Schedules are divided into following sections:-

Preamble to Price Schedules; and

Price Schedules (Price Proposals)

Preamble to Price Schedules

1.0 General

1.1 The Price Schedules are divided into separate Schedules as follows:

SUMMARY OF BID PRICES (PRICE SCHEDULES)

PART A: DESIGN BUILD COMPONENTS

Schedule No. 01	Plant and Mandatory Spare Parts Supplied from Abroad
Schedule No. 02	Plant and Mandatory Spare Parts Supplied from Within the Employer's Country
Schedule No. 03	Design Services
Schedule No. 04	Installation and Other Services
Schedule No. 05	Grand Summary (Sum of Schedule No 1 to 4)
Schedule No. 06	Recommended Spare Parts

PART B: ITEM RATE COMPONENTS - CONSTRUCTION WORKS

Schedule No. 07	Raw Water Main
Schedule No. 08	Clear Water Rising Main

PART C: OPERATION SERVICE

Schedule No. 09	Operation and Maintenance of Water Supply System
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PART D: PROVISIONAL SUM

Schedule No. 10	Provisional Sum
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- 1.2 The Price Schedules shall be read in conjunction with the Instructions to Bidders, General and Particular Conditions of Contract, Technical Specifications, and Drawings.
- 1.3 This preamble to the Price Schedules shall form part of the Contract. If there is inconsistency between the Price Schedules, Technical Specifications and Drawings and in case of conflict among different sections/heads, precedence shall be given in the following order of ascending priority:
- Price Schedules and Preamble to the Price Schedules;
 - Employer's Requirement and Technical Specifications;
 - Drawings;
 - Relevant Indian or International Standards.
- 1.4 The Schedules do not generally give a full description of the plant to be supplied and the services to be performed under each item. Bidders shall be deemed to have read the Employer's Requirements and other sections of the Bidding Document and reviewed the Drawings to ascertain the full scope of the requirements included in each item prior to filling in the rates and prices. The entered rates and prices shall be deemed to cover the full scope as aforesaid, including overheads and profit.
- 1.5 If Bidders are unclear or uncertain as to the scope of any item, they shall seek clarification in accordance with ITB 7 prior to submitting their bid.

- 1.6 The units and rates in figures entered into the Price Schedules should be typewritten or if written by hand, must be in print form. Price Schedules not presented accordingly may be considered nonresponsive. Any alterations necessary due to errors, etc., shall be initialed by the Bidder.
- 1.7 As specified in the Bid Data Sheet and Special Conditions of Contract, prices shall be fixed and firm for the duration of the Contract, or prices shall be subject to adjustment in accordance with the corresponding Appendix (Price Adjustment) to the Contract Agreement.
- 1.8 Bid prices shall be quoted in the manner indicated and in the currencies specified in the Instructions to Bidders in the Bidding Document.
- 1.9 For each item, Bidders shall complete each appropriate column in the respective Schedules, giving the price breakdown as indicated in the Schedules.
- 1.10 Prices given in the Schedules against each item shall be for the scope covered by that item as detailed in Section 6 (Employer's Requirements) or elsewhere in the Bidding Document.
- 1.11 Payments will be made to the Contractor in the currency or currencies indicated under each respective item.
- 1.12 When requested by the Employer for the purposes of making payments or part payments, valuing variations or evaluating claims, or for such other purposes as the Employer may reasonably require, the Contractor shall provide the Employer with a breakdown of any composite or lump sum items included in the Schedules.
- 1.13 The Contractor shall be deemed to have visited the site and read and examined the Bidding Documents before completing the Price Schedule. The Drawings, Specifications, Schedules etc. are to be considered as explanatory of each other and no advantage shall be taken of any omission in bidding documents.
- 1.14 The Contractor shall be deemed to be fully conversant with and to have made full allowance in his bid for the site conditions, the nature and complexity of the work to be undertaken, the other extensive development and construction work currently being or which may be executed on and around the Site and all changes in the nature and condition of the Site from that existing at the time of Tender.
- 1.15 General directions and descriptions of work and materials given in the Specification or shown on the Drawings are not necessarily repeated in the Price Schedules and reference is to be made to the Specification and the Drawings for this information.
- The Price Schedules is an estimate of the quantities of work involved and is to be used as a basis for pricing of the bid and for valuation of the work executed, in conjunction with instructions to bidders, terms and conditions of contract, general and specific technical specifications and drawings. The contractor shall quote the rates for all items including the cost of compliance of EMP and IEE. No separate cost shall be paid for compliance of EMP and IEE.
- 1.16 The quantities given in the Price Schedules are estimated and provisional, and are given to provide a common basis for bidding. The basis of payment will be the actual quantities of work ordered and carried out, as measured by the Contractor and verified by the Employer's Representative, and valued at the rates and prices bid in the priced Price Schedules, where applicable, and otherwise at such rates and prices as the Employer's Representative may fix within the terms of the Contract.
- 1.17 The rates quoted in the schedule shall be the all-inclusive value for the work described and be deemed to include for all the Contractor's liabilities and obligations and all risks set forth or implied in the document and all matters and things necessary for the proper construction of the Works

including surveying, setting out, plant, labour, supervising, materials, erection, maintenance, insurance, profit, taxes and duties together with all general risks liabilities and obligations set out or implied in the Contract. The Charge for any obligation of the Contractor for proper/satisfactory completion of work for which apparently no corresponding item is given in the Price Schedules shall be deemed to be included in the Contract Rates and Prices entered against the items.

- 1.18 The contractor will have to ensure all his equipment/machinery, staff including skilled and unskilled labour and protection against damages to third party for which he will have to provide insurance policies to cover up all of above. Moreover he will renew the policies before their expiry. It is mandatory to comply with the condition, otherwise he will not be allowed to proceed with the work. A rate or price shall be entered against each item, whether quantities are stated or not. The cost of items against which the Contractor has failed to enter a rate or price shall be deemed to be covered by other items, rates and prices entered in the Price Schedules.
- 1.19 The whole cost of complying with the provisions of the Contract shall be included in the Items provided in the Price Schedules, and where required Items are specified in the Price Schedules for the particular item, the cost shall be deemed to be distributed among the Prices entered for the related Items of Work, General directions and descriptions of work and Materials are not necessarily repeated nor summarized in the Price Schedules. References to the relevant sections of the Contract documentation shall be made before entering prices against each item in the priced Price Schedules.
- 1.20 Provisional Sums included and so designated in the Price Schedules shall be expended in whole or in part at the direction and discretion of the Engineer in accordance with the Conditions of Contract.
- 1.21 The method of execution and measurement of completed work for payment shall be in accordance to the respective procedures provided in the Technical Specifications or Particular Specifications under this Contract and in the absence of which shall be in accordance to the relevant BIS Standard and Standard Specification of the State of Bihar or Standard Specification published by the Central Public Works Department, Government of India as the case may be.
- 1.22 Arithmetic errors will be corrected by the Employer as follows:
- a) if there is a discrepancy between the unit price and the total price that is obtained by multiplying the unit price and quantity, the unit price shall prevail and the total price shall be corrected, unless in the opinion of the Employer there is an obvious misplacement of the decimal point in the unit price, in which case the total price as quoted shall govern and the unit price shall be corrected;
 - b) if there is an error in a total corresponding to the addition or subtraction of subtotals, the subtotals shall prevail and the total shall be corrected;
 - c) if there is a discrepancy between the bid price in the Summary of Price Schedules and the bid amount in item (c) of the Letter of Bid, the bid price in the Summary of Price Schedules will prevail and the bid amount in item (c) of the Letter of Bid will be corrected; and
 - d) if there is a discrepancy between words and figures, the amount in words shall prevail, unless the amount expressed in words is related to an arithmetic error, in which case the amount in figures shall prevail subject to (a), (b) and (c) above.
- 1.23 Rock is defined as all material that, in the opinion of the Employer's Representative, require blasting, or the use of metal wedges and sledgehammers, or the use of compressed air drilling for their

- removal, and that cannot be extracted by ripping with a tractor of at least 150 brake horse power (BHP) with a single, rear-mounted, heavy-duty ripper.
- 1.24 All defective works are liable to be demolished, rebuilt and defective materials replaced by the contractor at his own cost and time.
- 1.25 In view of the site location and their prevailing condition, it is mandatory to the Contractor to visit the site and make himself thoroughly familiar with the site conditions, access and account for all possible difficulties and other requirements mentioned elsewhere in his bid prior to submission. When a contractor submits his bid for this work, it will be considered that he has quoted for this work with full and complete knowledge of the site and prevailing conditions, and no claim for additional compensation shall be entertained on this account
- 1.26 Description of items in this Price Schedules is by itself not complete, and for a full description the Price Schedules should be read together with the Technical Specifications and Drawings. Rates quoted in the Price Schedules are deemed to have included all aspects covered in the Preamble and Technical Specifications, and all features and details shown in the Drawings.
- 1.27 The Bidder shall, in the course of studying the Contract Agreement, point out all his/her remarks on the documents and make all his/her queries to the Employer who will study these remarks and clarify any discrepancy between the Bidding Documents.
- 1.28 Submissions shall be strictly in accordance with the documents and if not it shall not be qualified in any way. The Bidder shall not alter the text of the Price Schedules.
- 1.29 Extra and excess items of work shall not vitiate the Contract. The Contractor shall be bound to execute extra items of work as directed by the Engineer. The rates for extra items will be as per rates decided under Contract Conditions.
- 1.30 For the evaluation process, if requested by the Evaluation Committee, the Contractor shall provide an analysis sheet for all priced items showing how the rate entered was derived.
- 1.31 The rates shall be deemed to include all the cost of Works described in the Bidding Documents to operate, maintain and manage the water supply assets and services in Bhagalpur Water Supply service area within Bhagalpur Municipal Corporation.
- 1.32 Price adjustment as stipulated in Section 8; Schedule 5 – Contractor Payments, Particular Conditions of Contract shall apply on all items of works, Materials, and services executed under this Price Schedules and as approved in the work plan, from the date of submission of bid.
- 1.33 The Bidder shall satisfy himself/herself as to the meaning of every item in the Price Schedules. The rates and prices inserted in the Price Schedules by the bidder shall be deemed to cover all costs, taxes, customs and import duties, levies, profits, risks, liabilities, transit insurance and obligations set forth or implied in the bid, as well as proper operation, maintenance and management of the Works including, but not limited to the following:
- (i) All labour and Materials including consumables;
 - (ii) All temporary work of every description required including over ground pumping and other requirements to avoid disruption to the service whilst maintenance or repair work is carried out;
 - (iii) The provision and use of all equipment, tools and Plant of every kind, whether mechanical or non-mechanical, required for the expeditious carrying out of the Works in their proper sequence;
 - (iv) Provision for scaffolding, staging, guard rails, temporary stairs, temporary access during execution, approach roads up to the Site for the movement of vehicles, and heavy excavation machinery with supporting transport facility;

- (v) Provision for excavation, back-filling, bringing to the Site extra fill for back-fill, making good and reinstating surfaces, disposing of surplus material, dealing with all ground water and wastewater flows, and for work in close proximity to other utility apparatus including protecting that apparatus;
 - (vi) Provision for work on pipe line corridors such as traffic control measures, safety barriers, obtaining any approvals and permits from authorities, and signage and reinstatement of surfaces;
 - (vii) Cooperation and coordination of the work with related authorities, other contractors and utilities, including obtaining their permission before starting the related Works if required; and
 - (viii) Providing security arrangements to guard the Site and premises at all times and to maintain strict control on the movement of Materials and labour until the completion of the work.
- 1.34 Allelectricity costs associated with operations and maintenance of facilities during operation service period shall be paid by BMC directly to the electricity service provider. The power connections shall be obtained in the name of BMC, the charges of which will be paid by BMC directly to electricity service provider or reimbursed under provisional sum if paid by the Contractor.
- 1.35 The serviceable materials, recovered while shifting of utilities as ascertained by the Engineer, shall be deposited at designated store yards or as directed by the Engineer. No payment shall be made to the Contractor in this regard.
- 1.36 Works itemized in the Price Schedules will be subject to measurement. Such measurement will be in the unit of measurement shown in the Price Schedules and payment shall be made on the measured quantities.
- 1.37 Any item of work which is specified and required for the proper operation, maintenance and management of Works, and not included or itemized in the Price Schedules, shall not be measured nor paid for separately but shall be deemed to have been allowed for by the Contractor as part of their Price Bid.
- 1.38 All rules and regulations of the labour department, contract labor Laws, provident fund and employee state insurance and connected Laws, and all other Laws of the land are to be complied with by the Bidder within the quoted rates.
- 1.39 The bidder is expected to inspect the Site to investigate the following items before quoting their rates in the tender:
- a) Nature and type of soil proposed for excavation and safety of excavation;
 - b) Availability of power for execution;
 - c) Availability of water for execution;
 - d) Means of disposal of storm water/bailing out water from the Site;
 - e) Means of disposal of water due to de-watering at the Site;
 - f) Nature and type of protection required for neighboring property to ensure full safety during construction activities in progress; and
 - g) Place for disposal of serviceable / unserviceable material obtained during construction activities in progress.
- 1.40 . No land will be provided by the Employer to the Contractor for constructing any structure for his labor, workman and supervisory camps, un-authorized hutments, canteen or teashops at the Site or within the premises. The Contractor shall make his/her own arrangements for the same outside the premises/boundary. These, if any, shall be with the knowledge of and prior approval of the Employer's Representative.

1.41 The word "Ditto" mean the repetition of all or part of the preceding items as applicable to complete the sense of the items.

2.0 Provisional Sums

2.1 The Provisional Sum included and so designated in the Price Schedules shall be expended in whole or in part at the direction and discretion of the Employer's Representative in accordance with the Conditions of Contract. It will be used by the Employer's Representative for nominated sub-contractors, line agencies, third party inspecting agencies, charges levied by statutory electrical, telephone, or other authorities, or for other miscellaneous works. The use of the Provisional Sum will also be for relocation of utilities above or under the ground that conflict with the existing or permanent line or level of the Works, independent sampling and laboratory testing, as directed by the Employer's Representative, replacement or compensation for plants and trees removed due to the Works, etc., as directed by the Employer's Representative.

3.0 Measurements:

3.1 It is to be expressly understood that the measured work is to be taken net (not withstanding any system or practice to the contrary) according to the actual quantities wherein finished according to the Drawings or as may be ordered from time to time by the Engineer and the cost calculated at the respective prices, without any additional charges for any necessary or contingent works connected therewith. The rates quoted are for works in situ and complete in every respect. Unless the Price Schedules specially indicates to the Contrary, the constructional plant and temporary works will not be measured.

3.2 Unless otherwise stated, all items are measured net and no allowance will be made for wastage, working space, bulking or shrinkage, overlaps and the like.

3.3 The method of measurement of completed works for payment shall generally be in accordance with the relevant Indian Standard Specifications. IS: 1200 (Part XVI) - 1979 Method of Measurement of Building and Civil Engineering Works. Laying of Water and Sewer Lines Including Appurtenant Items (Third Revision) and Part XIX - 1981 Water Supply, Plumbing and Drains (Third Revision) unless described otherwise in the following clauses.

3.4 The unit rate should be entered against each item in the Price Schedules and shall be written in ink in figures and words. Any item left unpriced will be deemed to be included for elsewhere in the Price Schedules and hence the rate for that item will be taken as NIL.

3.5 In case any discrepancy is found between the quoted rates and the amounts, the rates will be taken as correct. In case any discrepancy is found between figures and words quoted for rates, then the rates quoted in words will be taken as correct. The rate column should be filled in figures and words legibly while the amount column should be filled in figures legibly.

4.0 Earthworks

4.1 The unit of measurement for earthworks where measured separately shall be Cubic Meters. The rates for excavation shall include for all plant, materials and labour required for excavation, irrespective of depth in any material and in any location and shall also include for all temporary diversions, support and protection of any existing services and utilities, temporary support and maintenance of the excavation, dewatering, any additional excavation necessary to provide working space, refilling to any over excavation with materials as required by the Specification or shown on the Drawings, multiple handling and stack piling materials required for filling anywhere on the Site, backfilling with materials as required by the Specification or shown on the Drawings (including the cost of outside material) compaction. Disposal of surplus earth has been included in excavation item.

5.0 Pipe Lines

- 5.1 All pipe lengths shall be measured in linear meters and the Engineer will certify the total Effective Length laid, this length being measured along the centre-line of the pipeline excluding valves. Valve chambers shall be measured separately by number for sluice Valves & Air valves.
- 5.2 The rates for supply of pipes, Rubber Rings, mechanical joints, fittings and valves shall include for all costs of manufacture, inspection, testing, packing, consigning, transport, insurance, port charges, import dues, taxes, delivery to the stockpile or Temporary Storage Building and assistance to the Engineer for purposes of inspection.
- 5.3 The contractor shall have to provide SS bolts and nuts at his own cost.
- 5.4 The rates for laying of buried pipes shall include for all costs of setting out, transporting pipes from stockpile, cutting to length if required, supervision, laying, jointing, protecting internally and externally, testing, flushing and disinfecting pipelines, traffic control and diversion and restoration of ground levels. The rates shall include for local widening of trenches for bends, deflections and jointing.
- 5.5 The rates for laying pipes shall be applied over the full length of laid pipe.
- 5.6 The rate for supply and installation of pipes, specials, valves and fittings shall include for all costs of collection from stockpile or store, repair of coating if necessary, installation in chamber or trench, as the case may be, jointing, support, testing, protection, disinfection and flushing.
- 5.7 The Engineer will certify the rates inserted in the Price Schedules for items relating to pipe laying where the pipes are laid and not tested. Payment shall be made as per Schedule of Payment and Full Payment shall be made only when the pipes laid are tested and found satisfactory; and record drawings submitted.

6.0 Concrete

- 6.1 The rate for mass concrete for thrust blocks and pipe surrounds shall be measured net as the volume shown on the Drawings or ordered by the Engineer, but account shall not be taken of volume occupied by openings and recesses less than 0.15 cum. in net volume and the cost shall be deemed included in the quoted price

7.0 Valve Chambers

- 7.1 The item includes all the work such as excavation in soil or rock, backfilling etc., disposal of surplus earth, Brick Masonry, Plastering, R.C.C. works, drain arrangements, etc. complete. No payment will be made for any of the items, all items of work are considered to be included in the item of work and shall be measured in number.

8.0 Road Restorations

- 9.0 The road which are to be dismantled for laying the pipes shall be made good by re-excavating the settled backfilled earth to reinstate the road permanently to its original specifications and rates shall be deemed included in the quoted price

10.0 Barricading

- 10.1 Proper barricading has to be done during earth work, laying of pipes and up to the backfilling the trench completely for production arrangement wherever required and as per the direction of Engineer and the rates shall be deemed included in the quoted price.

11.0 Extra Items

11.1 If the contractor feels that certain items are not covered in the Price Schedules to complete the job he may give them as additional items in the Price Schedules complete with rates and quantities. The cost of this will be included during evaluation.

12.0 Approach to Work Site

12.1 Provision for access and approach to all construction sites is the responsibility of contractor and no payment will be made on this account.

13.0 Safety

13.1 The contract rates shall be deemed to include all costs of compliance with safety requirements in the Specification.

14.0 Layout

14.1 The contractor has to ascertain the existing services like water lines, sewers, telephone and electric lines/ cables by putting trial pits at his own cost. In the event of some services coming in the alignment of lines to be laid, the contractor shall inform well in advance to the Employer to get these shifted through line departments and the payment will be made from Provisional Sum. The contractor shall take all due care to avoid damage to any such services and, in case of any damage occurring to them in progressing the work, the Contractor shall make good the same at his own cost/he will have to pay the demurrages demanded by the concerned line Departments. No additional time shall, however, be allowed on this account.

15.0 Coordination and Interfaces with other Contracts

15.1 The contractor shall carryout his work in close coordination with the other contractor's works of concurrent Packages of the Project. Work under this package will have interface with other works of concurrent Packages for the works like construction of Service Reservoirs, rising mains and distribution lines and rehabilitation of existing infrastructures like tube-wells and reservoirs, and other infrastructures either existing or laid through other packages and the contractor shall ensure that lines laid under this package are properly and timely connected to works under other packages.

16.0 Operations Services

16.1 The Contractor shall be eligible for payment for Operation Service from the Operation Service Commencement Date. The payment for Operation Service shall comprise the following but are not limited to:

- Wages for Contractor personnel;
- Cost of chemicals utilized in the disinfection of water;
- Consumables for preventive and corrective maintenance of new infrastructure assets being operated and maintained by the Contractor;
- All cost of repairs undertaken as part of preventive and corrective maintenance, both on the water Treatment Plant , Raw water main and clear water main;
- All cost of furnishing, equipping and operation of offices for BMC staff and of Customer Service Centres;
- All cost related to administration, management, customer relations, monitoring, reporting, accounts, regulatory compliance and incidental charges if any; and
- All cost related to training of Deputation Personnel and BMC staff.

It is expressly clarified that all charges related to electricity payments, raw water extraction cost if any, shall be paid directly by the Employer, in accordance with provisions of the Contract.

16.2 The Price Schedules for Operation Services includes the following three parts:

Bihar Urban Development Investment Program

Improvement of Water Supply System in Bhagalpur Municipal Corporation (BH/WS/02)

- Operation of water production, storage and transmission;
- Operation of Intake Structures, Water treatment plant including pre and post chlorination;
- Operation of Electro Mechanical works.

16.3 The Contractor is free to distribute and allocate its non-technical operation cost such as for administration, management, customer services, training etc. in the quoted price.

16.4 Operation and maintenance period of entire water supply system proposed under this contract is 120 months.

17.0 Metric System and Abbreviations

Millilitre	ml
Million Litres per Day	mld
Million Litre	ML
Litre	ltr
Linear meter	m
Gram	gm
Square metre	m ²
Cubic metre	m ³
Number	No.
Kilogram	kg
Lump Sum	LS
Indian Rupees	Rs or INR
Millimetre	mm
Square Centimetre	cm ²
Square Millimetre	mm ²

18.0 The abbreviations used in the Specification and Price Schedules shall be read as follows:

IS	Indian Standard
BHP	Brake Horsepower
BS	British Standard
Cm or CM or cm	Centimeter
Cum or CUM	Cubic Meter
MM or mm	Millimeter /s
Rm or RM or RMT	Running Meters
Sqm	Square Meters
SqKm	Square Kilometers
Qtl.	Quintal
Qty.	Quantity
Drg.	Drawing
No. or Nos.	Number or Numbers
PCC	Plain Cement Concrete
RCC	Reinforced Cement Concrete

Price Schedules(Price Proposals)

PRICE PROPOSALS - SUMMARY OF BID PRICES (PRICE SCHEDULES)

Name of Project		Bihar Urban Development Investment Program – Tranche 2 (ADB Loan: Applied for / Project No. IND-41603-023)	
Name of Employer:		Bihar Urban Infrastructure Development Corporation Limited (BUIDCo)	
Contract Title:		Improvement of Water Supply System in Bhagalpur Municipal Corporation – BWSP 02	
Contract Package No:		BH/WS/02	
Bidder's Name :			
S. No.	Price Schedule No	Item Description	AMOUNT to be Quoted by Bidder (Foreign Currency/Local Currency)
PART A: DESIGN BUILDCOMPONENTS			
1.	Schedule No. 01	Plant and Mandatory Spare Parts Supplied from Abroad	Foreign Currency Portion: Local Currency Portion:
2.	Schedule No. 02	Plant and Mandatory Spare Parts Supplied from Within the Employer's Country	Foreign Currency Portion: Not applicable Local Currency Portion:
3.	Schedule No. 03	Design Services	Foreign Currency Portion: Local Currency Portion:
4.	Schedule No. 04	Installation and Other Services	Foreign Currency Portion: Local Currency Portion:
5.	Schedule No. 05	Grand Summary (Sum of Schedule No 1 to 4)	Foreign Currency Portion:

Bihar Urban Development Investment Program

Improvement of Water Supply System in Bhagalpur Municipal Corporation (BH/WS/02)

			Local Currency Portion:
6.	Schedule No. 06	Recommended Spare Parts	Foreign Currency Portion: Local Currency Portion:
Total of Part A (Amount of Schedule No 05)			Foreign Currency Portion: Local Currency Portion:
PART B: ITEM RATE COMPONENTS - CONSTRUCTION WORKS			
7.	Schedule No. 07	Raw Water Main	Local Currency Portion (INR):
8.	Schedule No. 08	Clear Water Rising Main	Local Currency Portion (INR):
Total of Part B (Sum of Schedule No. 7 & 8)			Local Currency Portion (INR):
PART C: OPERATIONS SERVICES			
9.	Schedule No. 09	Operation and Maintenance of Water Supply System	Local Currency Portion (INR):
PART D: PROVISIONAL SUM			
10.	Schedule No. 10	Provisional sum	INR 50,000,000
Grand Total (PART A+ PART B+ PART C) excluding provisional sum		In Figures	Foreign Currency Portion:

	In Words	Local Currency Portion: Foreign Currency Portion: Local Currency Portion:
Grand Total (PART A+ PART B+ PART C+ Part D) including provisional sum	In Figures	Foreign Currency Portion: Local Currency Portion:
	In Words	Foreign Currency Portion: Local Currency Portion:

PRICE PROPOSALS - PART A: DESIGN-BUILD COMPONENTS

Name of Project	Bihar Urban Development Investment Program – Tranche 2 (ADB Loan: Applied for / Project No. IND-41603-023)
Name of Employer:	Bihar Urban Infrastructure Development Corporation Limited (BUIDCo)
Contract Title:	Improvement of Water Supply System in Bhagalpur Municipal Corporation (BWSP 02)
Contract Package No:	BH/WS/02
Bidder's Name :	
Schedule No. 01: PLANT AND MANDATORY SPARE PARTS SUPPLIED FROM ABROAD	

Item	Description	Country of origin	Quantity	Unit Price ^a		Total Price ^a	Taxes and Duties
				Foreign Currency	CIP	Foreign Currency	Local Currency
1	2	3	4	5	6	7=4x6	8
1.1	Supply and delivery of the Raw water pumps including all machineries and connecting pipes and specials etc for Raw water Pumping station.						
1.1.1	Vertical Turbine pumpset 1027 m3/hr, at an approximate head of 29m (the head shall be designed as per actual site condition, 980 rpm as per specifications.(4W + 2S), and Vertical Solid Shaft Motor suitable for the above pump 980 RPM ,including Soft starter suitable for the above motor. and pipe connections		6 set				
1.1.2	Supply and delivery of power actuated and manually operated CI D/F Sluice valves of reputed make (IS:14846 amended up to date) PN 1.0 class of following dia complete (including jointing material) including CI Dismantling joints all material as per Technical Specifications and as per direction of Engineer.						

Item	Description	Country of origin	Quantity	Unit Price ^a		Total Price ^a	Taxes and Duties
				Foreign Currency	CIP	Foreign Currency	Local Currency
1	2	3	4	5	6	7=4x6	8
1.1.2.1	500 mm Sluice valve		6 No				
1.1.2.2	900 mm Sluice valve		1 No				
1.2	Supply and delivery of dual plate check valves as per API:594 and API:598 of PN 1.0 rating of following dia (including jointing material), including all material as per Technical Specifications and as per direction of Engineer.		6 No				
	NRV 500mm						
1.3	Supply and delivery of C.I. D/F electrically actuated long body butterfly valves (IS: 13095) PN-1.0 class of following dia complete (including jointing material) including CI Dismantling joints, all material as per Technical Specifications and as per direction of Engineer.		6 No				
	Butterfly Valves 500mm						
1.4	Supply and delivery of glycerin filled Pressure gauge of following ranges - 0 t 0 6.0kg/cm ² with isolation valve and tap off pipe complete in all respect as per technical specification and as per direction of Engineer. 150mm Diameter		6 No				

Item	Description	Country of origin	Quantity	Unit Price ^a		Total Price ^a	Taxes and Duties
				Foreign Currency	CIP	Foreign Currency	Local Currency
1	2	3	4	5	6	7=4x6	8
1.5	Supply and delivery of Electromagnetic Flow Meter etc. including Dismantling joints, all materials, CI/DI fittings etc. complete in all respect as per technical specification and as per direction of Engineer. 600 mm		2 No				
1.6	Supplying and delivery of Electrically Operated Travelling Crane (EOT) .Main girder & End Carriage fabricated from Rolled Steel Section, Gear Box for all motion, Electro Magnetic Friction Disc Type Brakes, all safety limit switches, LT wheels EN 9, Double Flanged 4No, with Sq. Cage motor of adequate rating (kW), duly painted mechanical cleaning and one coat of primer and two coat of synthetic paint and as per the direction of the Engineer.		2 No				
	EOT Crane with sufficient capacity to lift the raw water pumpsets with 9 m span and required lift.						
1.7	Supply delivery at site with necessary packing, receiving, unloading, shifting, storing of Non clog submersible pumping set of 2% Ni Cl Cascading, Impeller CF 8M, Shaft SS 410, mechanical seal with 10M Power & Control cable , 5M Galvanized Chain, 10M, 50mm MS galvanized Guide pipe, Duck Foot Bend, with Guide wire SS 304 etc. complete with all respect as per specification - Discharge 160 cum/hr and head 8 to 10 M		2 No				
	15 HP Drainage submersible pump for removal of silt in the intake sump.						
1.8	Supply and delivery of Air Compressor and accessories required for cleaning of Conveyance pipe. The capacity of the compressor shall be adequate to clean the deposited silt in the connecting pipe.		1 No				

Bihar Urban Development Investment Program

Improvement of Water Supply System in Bhagalpur Municipal Corporation (BH/WS/02)

Item	Description	Country of origin	Quantity	Unit Price ^a		Total Price ^a		Taxes and Duties	
				Foreign Currency	CIP	Foreign Currency	Local Currency		
1	2	3	4	5	6	7=4x6	8		
1.9	S S Air line for Air compressor 50mm		327.6 kg						
1.10	Perforated air pipe for compressed air 50 mm dia		302.4 m						
1.11	Supply and delivery of CI screwed Air valves class PN-1.0 single ball of approved make, including screw down isolation valve of following dia, jointing material i.e. bolts, nuts, rubber insertions etc. complete including all material as per Technical Specifications and as per direction of Engineer. 50 mm screwed ends		2 No						
1.12	Supply and delivery of anti-vibration pads for foundation of motors		6 No						
1.13	Supply and delivery of clamps for column pipe with rubber bush to control the vibration of bowl assembly		6 No						
1.14	Electrical Substation and system at Intake works								
1.14.1	Supply and delivery of underground cable IS:7098 Part-II as per SBPDC specifications and of approved make suitable for working voltage up to and including 33 kV in aluminium conductors XLPE armoured category-I including excavation of 30cm x 150cm size trench as per IS:1255, 24cm thick under layer, refill earth in the								

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Item	Description	Country of origin	Quantity	Unit Price ^a		Total Price ^a		Taxes and Duties	
				Foreign Currency	CIP	Foreign Currency	Local Currency		
1	2	3	4	5	6	7=4x6	8		
	remaining portion, making necessary connections including testing etc. as required of size given below and providing & making heat shrinkable type indoor/outdoor/straight through terminations for 33kV XLPE cables with required components.								
	Supply and delivery of 33kV Cable Tapping line from WTP to Raw Water Intake substation - 33kV 3Core 300Sq.mm cable.		2500 m						
1.15	Supply and delivery of the following equipment								
1.15.1	33 KV /0.433 KV substation at Raw Water Intake works								
1.15.1.1	36 KV VCB Panel- Supply and delivery of 800 A, 36 KV indoor type, triple pole metal clad truck mounted horizontal draw out type circuit breaker enclosed in cubicle made of CRCA sheet steel of minimum 3 mm thickness, comply with IS-13118, IEC-56 and confirming to M-2 class. The cubicle panel shall be vermin proof and dust-tight and shall be of folded type construction. The switchgear and control gears complete with all necessary supporting framework, nuts and bolts etc for securing the same to the floor conforming to IEC62271/100-200 with ingress protection as IP-5X. The Indoor panel switch gear (circuit breakers -3 Nos, CTs, - 6 NosPTs-3 Nos etc) and control gear (relays, meters etc) shall be mounted on the same panel with principal parameters as under:		1 Set						

Item	Description	Country of origin	Quantity	Unit Price ^a		Total Price ^a	Taxes and Duties
				Foreign Currency	CIP	Foreign Currency	Local Currency
1	2	3	4	5	6	7=4x6	8
	No. of Poles – 3						
	Rated Voltage - 36 KV						
	Rated Insulation Level						
	Lightning Impulse voltage - 170 kV(Peak)						
	One minute Power Frequency withstand voltage - 70 kV(rms)						
	Frequency - 50 Hz						
	Rated normal current - 800 A						
	Short circuit breaking capacity - 25 kA						
	Short circuit withstand current - 25 kA for 3 secs						

Item	Description	Country of origin	Quantity	Unit Price ^a		Total Price ^a	Taxes and Duties
				Foreign Currency	CIP	Foreign Currency	Local Currency
1	2	3	4	5	6	7=4x6	8
	Max. operating time - less than 3 cycles						
	Minimum operations at full rated short circuit breaking currents - 100 Rated Breaking capacity						
	Symmetrical - 25 kA						
	Asymmetrical - As per relevant standards						
	Rated making capacity - 2.5x25 kA						
	Operating mechanism - motor operated spring charged closing mechanism Heater/lamp/socket - 240V						
	Control voltage - 110 VDC						
	Vacuum Circuit Breakers with three interrupters mounted on same carriage having fixed & moving contacts in sealed envelope with vacuum below 10 ⁻⁶ torr. Complete as per technical specifications and/or as directed by Engineer.						
	The VCB shall include specified cubicle panel, Aluminium / Copper bus bars, Insulator, sleeves, PT, CT etc complete in all respect.						

Item	Description	Country of origin	Quantity	Unit Price ^a		Total Price ^a	Taxes and Duties
				Foreign Currency	CIP	Foreign Currency	Local Currency
1	2	3	4	5	6	7=4x6	8
1.15.1.2	Supply and delivery of 33kV Control & Relay Panel duly mounted with protective relays, metering equipment etc. required for the satisfactory operation of 33kV side of 33/0.4kV Power Transformers. The C/R cubicles of folded type construction with front base frame and door frame fabricated from CRCA sheet steel 10 SWG (3mm) thickness, while the side, roof & doors fabricated out of 14 SWG (2mm) thick CRCA sheet steel. The height of panel inclusive of base channel height of 102 mm of not more than 2312 mm, width of 750 mm or suitable to accommodate equipments and panel of depth 610 mm with dust & vermin proof and suitable for tropical use. The complete panel incorporates all necessary meters, instruments relays, control switches, indicating lamps, mimic buses, audible & visual alarms. The enclosure provide minimum degree of protection equivalent to IP-51 as per IS 2147. The relays offered conforming to latest issue of IS: 3231 & IS-8686. For over current & earth fault numerical relays be provided. In three phase protection relay, the setting for over current element be 50-200% (in steps of 10%)		1 Set				
	and for earth fault element from 10 to 80% (in steps of 10%). Relay should also have features of self diagnosis, minimum last five abnormal events recording over current & earth fault including fault level & phase along with date & time, on line display of current and communicable with open protocol having RS-485 port. The panel be equipped with Annunciation scheme for indicating all annunciations equipped for the trip & non						

Item	Description	Country of origin	Quantity	Unit Price ^a		Total Price ^a	Taxes and Duties
				Foreign Currency	CIP	Foreign Currency	Local Currency
1	2	3	4	5	6	7=4x6	8
	trip alarms. All indicating instruments of Switch Board type back connected suitable for flush mounting and provided with dust & vermin proof case for tropical use. All indicating instruments conforming to latest edition of IS-2419/1963. complete as per technical specifications and /or as directed by engineer.						
	33 kV Relay Panel						
1.16	Supply and delivery of required no. of lightening arrester set complete with 600mm x 600mm x 6mm thick G.I. earthing plate, G.I. strip of size 25mmx5mm thick, G.I. Finial made of GI bar 25mm dia and 2m long.		1 Set				
	Lightning Impulse voltage - 170 kV(Peak)						
1.17	Supply and delivery of HT metering cubical panel as approved By DISCOMs fabricated out of 14 SWG CRCA sheet steel in two compartment & MS angle of size 60mmX6mm having provision for Following:		1 Set				
	(i) Provision for fixing Trivector Meter (To be supplied by DISCOMs)						
	(ii) Provision for fixing of combined CT PT Set (To be supplied by						
	DISCOMs)						

Item	Description	Country of origin	Quantity	Unit Price ^a		Total Price ^a	Taxes and Duties
				Foreign Currency	CIP	Foreign Currency	Local Currency
1	2	3	4	5	6	7=4x6	8
	(iii) TT Block						
	(iv) 6mm Bakelite sheet on all sides.						
1.18	Supply and delivery of Earthing materials for all substation equipment as per IS:3043 as per IEEE Standard 80-2000 (IEEE Guide for safety in AC Substation Grounding)		5 Set				
1.19	SF Rubber matting with one side corrugated as per IS specification 15652/2006 - 11 kV, 25 mm thick		12 Sq.m				
	Transformer		2 Set				
1.20	Supply and delivery of following rating out door type oil filled off circuit tap changer transformer with the following specification and confirming to IS 1180(Part 1 -2014) Thickness of transformer Tank (rolling tolerance as per IS)						
	No Load Voltage ratio : 33/0.433 kV						
	No. of phases / frequency : 3 Phases/ 50 Hz						
	Type : Core type, double copper wound						

Item 1	Description 2	Country of origin 3	Quantity 4	Unit Price ^a		Total Price ^a	Taxes and Duties
				Foreign Currency 5	CIP 6	Foreign Currency 7=4x6	Local Currency 8
	Cooling : ONAN						
	Vector Group : DYN11						
	Temperature rise (OIL/WINDING) : 40/50 deg C						
	Off circuit Taps on HV side in the steps of 2.5%,+5 % to -10%						
	Termination (HV) : Air filled cable end box suitable for 33 kV of adequate cable size						
	Termination (LV) : Air filled cable end box suitable for 1.1 kV of adequate cable size						
	The transformer shall be supplied with following fittings:						
	(i)Bochholz Relay						
	(ii)Conservator with drain valve						

Item 1	Description 2	Country of origin 3	Quantity 4	Unit Price ^a		Total Price ^a	Taxes and Duties
				Foreign Currency 5	CIP 6	Foreign Currency 7=4x6	Local Currency 8
	(iii)Magnetic Level Indicator						
	(iv)Silica gel breather with oil seal						
	(v) First filling of filtered oil as per IS : 335 including make up fill during installation of transformer plus 10% extra oil						
	(vi) off circuit switch						
	(vii) Lifting lugs						
	(viii) Earthing terminal- 2 nos.						
	(ix) Thermometer pocket						
	(x) Air release plug						
	(xi) Inspection cover						

Item 1	Description 2	Country of origin 3	Quantity 4	Unit Price ^a		Total Price ^a	Taxes and Duties
				Foreign Currency 5	CIP 6	Foreign Currency 7=4x6	Local Currency 8
	(xii) Top filter valve - 1no.						
	(xiii) Radiator with top & bottom shut off valves						
	(xiv) 100 mm dial magnetic oil level guage with max. pointer & with alarm contacts						
	(xv) Rating & Diagram plate						
	(xvi) Bi-directional Plain/ Flanged Rollers						
	(xvii) 150 mm dial Winding temperature indicator with max pointer and alarm & trip contacts						
	(xviii) 150 mm dial Oil temperature indicator with max pointer and alarm & trip contacts						
	(xix) Disconnecting facility of HV Cable box						
	Transformers descibed as above and as per the following continuous rating						

Item	Description	Country of origin	Quantity	Unit Price ^a		Total Price ^a	Taxes and Duties
				Foreign Currency	CIP	Foreign Currency	Local Currency
1	2	3	4	5	6	7=4x6	8
	1250kVA Transformer (1250KVA capacity of transformer is minimum, however if the design indicates a higher capacity shall be considered).						
1.21	Supply and delivery of Automatic Power factor Improvement Panel to improve the power factor up to 0.95 lagging. This will include panel cubical, Microprocessor based intelligent power factor correction relay complete in all respect.		1 Set				
1.22	Supply and delivery of Rubber matting with one side corrugated as per IS specification 15652/2006 - 11 kV, 25 mm thick		15 Sq.m				
	LT Panel RWPS						
1.23	Supply and delivery of wall/free standing floor mounted dust and vermin proof compartmentalized cubical panel for 0.415kV including the suitable size of electrolytic grade Copper Bus Bars, insulators etc., for the following feeders:		1 Set				
	1. 2 Nos. Incoming ACB from the transformer- This will be provided with (but not limited to) Digital Multifunction meter compatible to SCADA, metering, Protection CT's, IDMT 3O/C&1 E/F, indicating lamps, control fuse , wiring etc. complete in all respect						
	2. 1No. ACB for Bus Coupler. This will be provided with (but not limited to) without release Protection CT's, IDMT 3 O/C & 1 E/F, Indicating Lamps, Control Fuses and wiring etc. complete in all respect.						
	3. MCCB panels for APFC Panel, Pumping plant,						

Item 1	Description 2	Country of origin 3	Quantity 4	Unit Price ^a		Total Price ^a		Taxes and Duties
				Foreign Currency 5	CIP 6	Foreign Currency 7=4x6	Local Currency 8	
	Above panels shall be provided with- (but not limited to) metering CTs, multi function meter compatible to SCADA, Ampermeter with SS, Voltmeter with SS, Indicating Lamps, Control Fuse, wiring etc. complete in all respect. (Minimum No.8)							
	4.MCCB panels for auxiliary and spare (Minimum No.6)							
	Above panels shall be provided with- (but not limited to) metering CTs, multi function meter compatible to SCADA, Ampermeter with SS, Voltmeter with SS, Indicating Lamps, Control Fuse, wiring etc. complete in all respect. (Minimum No.8)							
	MCCB shall be provided with shunt release, Under voltage release and Earth fault module.							
1.24	Supply and delivery of Bus Trunking arrangement in convenient sections complete with housing of galvanized sheet steel of minimum 1.5mm thickness, Copper bus bar for use of 3phase-4Wire 415Volt A.C supply with degree of protection ip-42 for the minimum 2000A rating including jointing of Section, flexible joints, expansion joints and earthing with 2 runs of aluminum strips,etc. From Transformer LT to incoming of LT Panel.		1 Lot					
1.25	Supply and delivery of XLPE insulated sheathed cable of 1.1 kV grade with aluminium conductor Armoured of IS:7098-1/1554-1 approved make in ground as per IS:1255		1 Lot					
1.26	Supply and delivery of Battery Charger, battery bank of min 150 AH capacity comprising SMF/VRLA batteries, MS / Teakwood battery stand, interconnect wiring etc. as required complete in all respect.		1 set					

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Item	Description	Country of origin	Quantity	Unit Price ^a		Total Price ^a		Taxes and Duties	
				Foreign Currency	CIP	Foreign Currency	Local Currency		
1	2	3	4	5	6	7=4x6	8		
1.27	Supply and delivery of Earthing materials of all equipment as per IS:3043. and requirement of IER.		1 Job						
1.28	Supply and delivery of the settled water pumping station machineries and connected pipes and specials etc for settled water sedimentation Pumping station.								
1.28.1	Vertical Turbine pumpset 1027 m3/hr, at an approximate head of 8m (the head shall be designed as per actual site condition, 980 rpm as per specifications.(4W + 2S) and Vertical Solid Shaft Motor suitable for the above pump 980 RPM including soft starter for the pumps, and MS pipe connections		6 set						
1.28.2	Providing, lowering, laying, aligning, fixing in position in pipe line, power actuated and manually operated CI D/F Sluice valves of reputed make (IS:14846 amended up to date) PN 1.0 class of following dia complete (including jointing material) including CI Dismantling joints all material, labour, testing and commissioning along with pipe line as per Technical Specifications and as per direction of Engineer.		6 No						
	450mm								
1.28.3	Supply and delivery of dual plate check valves as per API:594 and API:598 of PN 1.0 rating of following dia (including jointing and jointing material), including all material, as per Technical Specifications and as per direction of Engineer.		6 No						

Item	Description	Country of origin	Quantity	Unit Price ^a		Total Price ^a	Taxes and Duties
				Foreign Currency	CIP	Foreign Currency	Local Currency
1	2	3	4	5	6	7=4x6	8
	NRV 450mm						
1.28.4	Supply and delivery of DI D/F electrically actuated long body butterfly valves (IS: 13095) PN-1.0 class of following dia complete (including jointing material) including all material Dismantling joints as per Technical Specifications and as per direction of Engineer.						
1.28.4.1	450mm		6 No				
1.28.4.2	900mm		1 No				
1.28.5	Providing, installation, testing and commissioning of glycerin filled Pressure gauge of following ranges with isolation valve and tap off pipe complete in all respect as per technical specification and as per direction of Engineer.		6 No				
	Glycerine filled Pressure Gauge 0 to 6.0 kg/cm ² 150mm dia.						
1.28.6	Supply and delivery of Electrically Operated Travelling Crane (EOT) .Main girder & End Carriage fabricated from Rolled Steel Section, Gear Box for all motion, Electro Magnetic Friction Disc Type Brakes, all safety limit switches, LT wheels EN 9, Double Flanged 4No,		1 No				

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Item 1	Description 2	Country of origin 3	Quantity 4	Unit Price ^a		Total Price ^a	Taxes and Duties
				Foreign Currency	CIP	Foreign Currency	Local Currency
				5	6	7=4x6	8
	with Sq. Cage motor of adequate rating (kW), duly painted mechanical cleaning and one coat of primer and two coat of synthetic paint and as per the direction of the Engineer.						
	EOT Crane with sufficient capacity to lift the settled water pumpsets with 9 m span and required lift						
1.28.7	Supply and delivery of wall/free standing floor mounted dust and vermin proof compartmentalized cubical panel for 0.415kV including the suitable Supply and delivery of wall /free standing floor mounted dust and vermin proof compartmentalized cubical panel for 0.415kV including the suitable size of electrolytic grade Copper Bus Bars, insulators etc., for the following feeders:		1 Set				
	1. 1 No. Incoming MCCB -This shall be provided with- (but not limited to) metering CTs, multi function meter compatible to SCADA, Ampere meter with SS, Voltmeter with SS, Indicating Lamps, Control Fuse, wiring etc. complete in all respect.						
	2. MCCB panels for Pumping plant Automatic Star Delta Starter 6 Nos.						
	Above panels shall be provided with- (but not limited to) metering CTs, multi function meter compatible to SCADA, Ampere meter with SS, Voltmeter with SS, Indicating Lamps, Control Fuse, wiring etc. complete in all respect. (Minimum No.8)						
	3.MCCB panels for auxiliary and spare-						

Item	Description	Country of origin	Quantity	Unit Price ^a		Total Price ^a	Taxes and Duties
				Foreign Currency	CIP	Foreign Currency	Local Currency
1	2	3	4	5	6	7=4x6	8
	Above panels shall be provided with- (but not limited to) metering CTs, multi function meter compatible to SCADA, Ampere meter with SS, Voltmeter with SS, Indicating Lamps, Control Fuse, wiring etc. complete in all respect. (Minimum No.3)						
	MCCB shall be provided with shunt release, Under voltage release and Earthfault module.						
1.28.8	Supply and delivery of Rubber matting with one side corrugated as per IS specification 15652/2006 - 11 kV, 25 mm thick for the Panel		1 set				
1.28.9	Supply and delivery of XLPE insulated sheathed cable of 1.1 kV grade with aluminium conductor Armoured of IS:7098-I/1554-1 approved make in ground as per IS:1255 etc. of required size and length for the pumping stations.		1 Lot				
1.28.10	Supply and delivery of Earthing of all equipment as per IS:3043 and requirement of IER.		1 Set				
1.28.11	Supply and delivery of charged ABC type fire extinguisher with nut, bolts etc as required.5 KG		4 No				
1.29	Supply and delivery of the Clear water pumping station machineries including connected pipes and specials etc complete at WTP						

Item	Description	Country of origin	Quantity	Unit Price ^a		Total Price ^a	Taxes and Duties
				Foreign Currency	CIP	Foreign Currency	Local Currency
1	2	3	4	5	6	7=4x6	8
1.29.1	Vertical Turbine pumpset 978 m ³ /hr, at an approximate head of 38m (the head shall be designed as per actual site condition, 980 rpm as per specifications. (5W + 2S) and Vertical solid shaft Motor suitable for the pumps including the soft starter suitable for the motor of the pump and connecting pipes		7 set				
1.29.2	Supply and delivery of power actuated and manually operated DI D/F Sluice valves of reputed make (IS:14846 amended up to date) PN 1.0 class of following dia complete (including jointing material) including CI Dismantling joint and all material as per Technical Specifications and as per direction of Engineer.						
1.29.2.1	450mm						
1.29.1.2	450mm		7 No				
1.29.2.3	700mm		1 No				
1.29.3	Supply and delivery of DI dual plate check valves as per API:594 and API:598 of PN 1.0 rating of following dia with jointing material including DI Dismantling joint all material, as per Technical Specifications and as per direction of Engineer.						
1.29.3.1	NRV 450mm		7 No				

Item 1	Description 2	Country of origin 3	Quantity 4	Unit Price ^a		Total Price ^a	Taxes and Duties
				Foreign Currency 5	CIP 6	Foreign Currency 7=4x6	Local Currency 8
1.29.3.2	NRV 700mm		2 No				
1.29.4	Supply and delivery of DI D/F electrically operated long body butterfly valves (IS: 13095) PN-1.0 class of following dia complete (including jointing material) including DI Dismantling joint, all material as per Technical Specifications and as per direction of Engineer.						
1.29.4.1	450mm		7 No				
1.29.4.2	700mm		2 No				
1.29.5	Supply and delivery of glycerin filled Pressure gauge of following ranges with isolation valve and tap off pipe complete in all respect as per technical specification and as per direction of Engineer.		7 No				
	Glycerine filled Pressure Gauge 0 to 10kg/cm² 150mm diameter						
1.29.6	Supply and of Electromagnetic Flow Meter etc. including all materials and making connection with pipeline required for Electromagnetic Flow Meter as per technical specification and as per direction of Engineer.						
1.29.6.1	EMF 600 mm		2 No				

Item	Description	Country of origin	Quantity	Unit Price ^a		Total Price ^a	Taxes and Duties
				Foreign Currency	CIP	Foreign Currency	Local Currency
1	2	3	4	5	6	7=4x6	8
1.29.6.2	EMF 400 mm		22 No				
1.29.6.3	EMF 300 mm		20 No				
1.29.6.4	EMF 200 mm		2 No				
1.29.6.5	EMF 150 mm		1 No				
1.29.7	Supply and delivery of Electrically Operated Travelling Crane (EOT). Main girder & End Carriage fabricated from Rolled Steel Section, Gear Box for all motion, Electro Magnetic Friction Disc Type Brakes, all safety limit switches, LT wheels EN 9, Double Flanged 4No, with Sq. Cage motor of adequate rating (kW), duly painted mechanical cleaning and one coat of primer and two coat of synthetic paint and as per the direction of the Engineer. Add extra for additional per metre lift.		1 No				
	EOT Crane 10T, 9m span, 9m lift.						
1.30	Electrical Substation and system						
1.30.1	33kV Single Circuit Lattice Structure		1 set				

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Item	Description	Country of origin	Quantity	Unit Price ^a		Total Price ^a	Taxes and Duties
				Foreign Currency	CIP	Foreign Currency	Local Currency
1	2	3	4	5	6	7=4x6	8
1.30.2	Supply and delivery of 33 kV Double Pole structure made of two nos. 10 m long PCC poles & 7 nos. MS Channel size 100x50x6mm with GO switch, DO fuse set and lightning arrestors with following specifications. GO: Off load type gang operated three pole Horizontal type switch suitable for 33kV, 800A, 3phase central post rotating double break isolator complete with MS Hardware, copper moving & fixed contacts, assembly of 9 Nos. Post Insulators, GI pipe of suitable length for operation. DO: 3 Nos. Horizontal/Vertical mounted 33kV Horn Gap fuse set / Drop Out fuse set, 33kV barrel fuses mounted on 6 Nos. Post insulators. LA: 3 piece non linear resistor type lightening arrester of approved make suitable for 3 wire, 33kV oh line with rated voltage 30kV rms & nominal discharge current rating of 10 kA & complete with galvanized clamping arrangement, GI bolts, nuts, washers etc. as required. Jumpers:3 Nos. ACSR Dog Conductor mounted on post type insulators as required.		2 set				
	The GO shall be operated by hand operated liver properly earthed with provision for locking mounted at 3'. Complete as per technical specifications and /or as directed by the Engineer.						
1.30.3	36 KV VCB Panel - Supply and delivery of 800 A, 36 KV indoor type, triple pole metal clad truck mounted horizontal draw out type circuit breaker enclosed in cubicle made of CRCA sheet steel of minimum 3 mm thickness, comply with IS-13118, IEC-56 and confirming to M-2 class. The cubicle panel shall be vermin proof and dust-tight and shall be of folded type construction. The switchgear and control gears complete with all necessary supporting framework, nuts and bolts etc for securing the same to the floor conforming to		1 Set				

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Item	Description	Country of origin	Quantity	Unit Price ^a		Total Price ^a	Taxes and Duties
				Foreign Currency	CIP	Foreign Currency	Local Currency
1	2	3	4	5	6	7=4x6	8
	IEC62271/100-200 with ingress protection as IP-5X. The Indoor panel switch gear (circuit breakers-3 Nos, CTs-6 Nos, PTs -3 Nos etc) and control gear (relays, meters etc) shall be mounted on the same panel						
	No. of Poles – 3						
	Rated Voltage - 36 KV						
	Rated Insulation Level						
	Lightning Impulse voltage - 170 kV(Peak)						
	One minute Power Frequency withstand voltage - 70 kV(ms)						
	Frequency - 50 Hz						
	Rated normal current - 800 A						

Item	Description	Country of origin	Quantity	Unit Price ^a		Total Price ^a	Taxes and Duties
				Foreign Currency	CIP	Foreign Currency	Local Currency
1	2	3	4	5	6	7=4x6	8
	Short circuit breaking capacity - 25 kA						
	Short circuit withstand current - 25 kA for 3 secs						
	Max. operating time - less than 3 cycles						
	Minimum operations at full rated short circuit breaking currents - 100 Rated Breaking capacity						
	Symmetrical - 25 kA						
	Asymmetrical - As per relevant standards						
	Rated making capacity - 2.5x25 kA						
	Operating mechanism - motor operated spring charged closing mechanism Heater/lamp/socket - 240V						
	Control voltage - 110 VDC						

Item 1	Description 2	Country of origin 3	Quantity 4	Unit Price ^a		Total Price ^a	Taxes and Duties
				Foreign Currency	CIP	Foreign Currency	Local Currency
				5	6	7=4x6	8
	Vacuum Circuit Breakers with three interrupters mounted on same carriage having fixed & moving contacts in sealed envelop with vacuum below 10 ⁻⁶ torr. complete as per technical specifications and/or as directed by Engineer.						
	The VCB shall include specified cubicle panel, Aluminium / Copper bus bars, Insulator, sleeves, PT, CT						
1.30.4	Supply, installation, testing & commissioning of 33kV Control & Relay Panel duly mounted with protective relays, metering equipment etc. required for the satisfactory operation of 33kV side of 33/0.4kV Power Transformers.		1 No				
1.30.5	Supply and delivery of HT metering cubical panel as approved By DISCOMs fabricated out of 14 SWG CRCA sheet steel in two compartment & MS angle of size 60mmX6mm having provision for Following:		1 No				
	(i) Provision for fixing Trivector Meter (To be supplied by DISCOMs)						
	(ii) Provision for fixing of combined CT PT Set (To be supplied by						
	DISCOMs)						
	(iii) TT Block						

Item	Description	Country of origin	Quantity	Unit Price ^a		Total Price ^a	Taxes and Duties
				Foreign Currency	CIP	Foreign Currency	Local Currency
1	2	3	4	5	6	7=4x6	8
	(iv) 6mm Bakelite sheet on all sides.						
	Metering Cubicle						
1.30.6	Supply and delivery of lightening arrester set complete with 600mm x 600mm x 6mm thick G.I. earthing plate, G.I. strip of size 25mmx5mm thick		1 set				
	Lightning Impulse voltage - 170 kV(Peak)						
1.30.7	Supply and delivery of of all substation equipment as per IS:3043 as per IEEE Standard 80-2000 (IEEE Guide for safety in AC Substation Grounding)		1 Job				
1.30.8	Supply and delivery of following size earth wire/strip in horizontal or vertical run in ground/surface/recess		250 m				

Item	Description	Country of origin	Quantity	Unit Price ^a		Total Price ^a	Taxes and Duties
				Foreign Currency	CIP	Foreign Currency	Local Currency
1	2	3	4	5	6	7=4x6	8
	25mm x 3mm G.I.Strip						
	Frequency - 50 Hz						
1.30.9	Supply and delivery of SF Rubber matting with one side corrugated as per IS specification 15652/2006 - 11 kV		12 Sq.m				
	Rated normal current - 800 A						
1.31	Transformer		2 set				
1.31.1	Supply and delivery of following rating out door type oil filled off circuit tap changer transformer with the following specification and confirming to IS 1180(Part 1 -2014) Thickness of transformer Tank (rolling tolerance as per IS)						
	No Load Voltage ratio : 33/0.433 kV						
	No. of phases / frequency : 3 Phases/ 50 Hz						
	Type : Core type, double copper wound						

Item 1	Description 2	Country of origin 3	Quantity 4	Unit Price ^a		Total Price ^a	Taxes and Duties
				Foreign Currency 5	CIP 6	Foreign Currency 7=4x6	Local Currency 8
	Cooling : ONAN						
	Vector Group : DYN11						
	Temperature rise (OIL/WINDING) : 40/50 deg C						
	Off circuit Taps on HV side in the steps of 2.5%,+5 % to -10%						
	Termination (HV) : Air filled cable end box suitable for 33 kV of adequate cable size						
	Termination (LV) : Air filled cable end box suitable for 1.1 kV of adequate cable size						
	The transformer shall be supplied with following fittings:						
	(i)Bochholz Relay						
	(ii)Conservator with drain valve						

Item 1	Description 2	Country of origin 3	Quantity 4	Unit Price ^a		Total Price ^a	Taxes and Duties
				Foreign Currency 5	CIP 6	Foreign Currency 7=4x6	Local Currency 8
	(iii)Magnetic Level Indicator						
	(iv)Silica gel breather with oil seal						
	(v) First filling of filtered oil as per IS : 335 including make up fill during installation of transformer plus 10% extra oil						
	(vi) off circuit switch						
	(vii) Lifting lugs						
	(viii) Earthing terminal- 2 nos.						
	(ix) Thermometer pocket						
	(x) Air release plug						
	(xi) Inspection cover						

Item 1	Description 2	Country of origin 3	Quantity 4	Unit Price ^a		Total Price ^a	Taxes and Duties
				Foreign Currency 5	CIP 6	Foreign Currency 7=4x6	Local Currency 8
	(xii) Top filter valve - 1no.						
	(xiii) Radiator with top & bottom shut off valves						
	(xiv) 100 mm dial magnetic oil level guage with max. pointer & with alarm contacts						
	(xv) Rating & Diagram plate						
	(xvi) Bi-directional Plain/ Flanged Rollers						
	(xvii) 150 mm dial Winding temperature indicator with max pointer and alarm & trip contacts						
	(xviii) 150 mm dial Oil temperature indicator with max pointer and alarm & trip contacts						
	(xix) Disconnecting facility of HV Cable box						
	Transformers described as above and as per the following continuous rating						

Item	Description	Country of origin	Quantity	Unit Price ^a		Total Price ^a	Taxes and Duties
				Foreign Currency	CIP	Foreign Currency	Local Currency
1	2	3	4	5	6	7=4x6	8
	2000kVA Transformer (2000KVA capacity of transformer is minimum, however if the design indicates a higher capacity shall be considered).						
1.31.2	Supply and delivery of Automatic Power factor Improvement Panel to improve the power factor up to 0.95 lagging. This will include panel cubical, Microprocessor based intelligent power factor correction relay complete in all respect.		1 Set				
1.31.3	Supply and delivery of SF Rubber matting with one side corrugated as per IS specification 15652/2006		12 Sq.m				
	Rated making capacity - 2.5x25 kA						
1.32	LT Panel CWPS		1 Set				
1.32.1	Supply and delivery of wall/free standing floor mounted dust and vermin proof compartmentalised cubical panel for 0.415kV including the suitable size of electrolytic grade Copper Bus Bars, insulators etc., for the following feeders:						
	1. 2 Nos. Incoming ACB from the transformer- This will be provided with (but not limited to) Digital Multifunction meter compatible to SCADA, metering, Protection CT's, IDMT 3O/C&1 E/F, indicating lamps, control fuse , wiring etc. complete in all respect						
	2. 1No. ACB for Bus Coupler. This will be provided with (but not limited to) without release Protection CT's, IDMT 3 O/C & 1 E/F, Indicating Lamps, Control Fuses and wiring etc. complete in all respect.						

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Improvement of Water Supply System in Bhagalpur Municipal Corporation (BH/WS/02)

Item	Description	Country of origin	Quantity	Unit Price ^a		Total Price ^a	Taxes and Duties
				Foreign Currency	CIP	Foreign Currency	Local Currency
1	2	3	4	5	6	7=4x6	8
	3. MCCB panels for APFC Panel, Pumping plant,						
	Above panels shall be provided with- (but not limited to) metering CTs, multi function meter compatible to scada, Ampermeter with SS, Voltmeter with SS, Indicating Lamps, Control Fuse, wiring etc. complete in all respect. (Minimum No.9)						
	4.MCCB panels for auxiliary and spare (Minimum No.6)						
	Above panels shall be provided with- (but not limited to) metering CTs, multi function meter compatible to scada, Ampermeter with SS, Voltmeter with SS, Indicating Lamps, Control Fuse, wiring etc. complete in all respect.						
	MCCB shall be provided with shunt release, Under voltage release and Earth fault module.						
1.32.2	Supply and delivery of Bus Trunking arrangement in convenient sections complete with housing of galvanized sheet steel of minimum 1.5mm thickness, Copper bus bar for use of 3phase-4Wire 415Volt A.C supply with degree of protection IP-42 for the minimum 2000A rating and earthing with 2 runs of aluminum strips,etc. From Transformer LT to incoming of LT Panel.		1 Job				

Item	Description	Country of origin	Quantity	Unit Price ^a		Total Price ^a	Taxes and Duties
				Foreign Currency	CIP	Foreign Currency	Local Currency
1	2	3	4	5	6	7=4x6	8
1.31.3	Supply and delivery of XLPE insulated sheathed cable of 1.1 kV grade with aluminium conductor Armoured of IS:7098-I/1554-1 approved make in ground as per IS:1255		1 Job				
	of required size and length for the pumping stations.						
1.32.4	Supply and delivery of Battery Charger, battery bank of min 150 AH capacity comprising SMF/VRLA batteries, MS / Teakwood battery stand, interconnect wiring etc. as required complete in all respect.		1 set				
1.32.5	Supply and delivery of internal and external lighting of all campus including Raw water pumping station, Sedimentation Pumping Station, Clear Water pumping Station and all other buildings to be constructed under this tender. The illumination level to be provided shall be in accordance to the lux level mentioned elsewhere in technical specifications. All lights shall be LED.		1 Job				
1.32.6	Supply and delivery of 3pin 5Amp, and 6 pin15Amp light and power points as per requirement to be decided by the Engineer In charge for all buildings under this tender.		1 Job				
1.32.7	Supply and delivery of Ceiling fans as per requirement to be decided by the Engineer Incharge for all buildings under this tender.		1 Lot				
1.32.8	Supply and delivery of Ventilation arrangement for all the buildings proposed under this tender according to requirement narrated in technical Specifications and decided by the engineer In charge.		1 Lot				
1.32.9	Supply and delivery of spares , tools and other equipment for the Raw water pumping station, settled water pump house and clear water pump house		1 lot				

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Improvement of Water Supply System in Bhagalpur Municipal Corporation (BH/WS/02)

Item 1	Description 2	Country of origin 3	Quantity 4	Unit Price ^a		Total Price ^a	Taxes and Duties
				Foreign Currency 5	CIP 6	Foreign Currency 7=4x6	Local Currency 8
1.33	Automation and equipment						
	Supply and delivery of the SCADA system with the following equipment						
	For Raw water Pump House						
1.33.1	PLC Panel with required hardware & software		1 Lot				
1.33.2	UPS with batteries		1 Lot				
1.33.3	Level Instruments		2 Nos				
1.33.4	Temperature Instruments		6 Nos				
1.33.5	Vibration monitoring System		6 Nos				
1.33.6	Pressure Transmitter		7 Nos				

Item 1	Description 2	Country of origin 3	Quantity 4	Unit Price ^a		Total Price ^a	Taxes and Duties
				Foreign Currency 5	CIP 6	Foreign Currency 7=4x6	Local Currency 8
1.33.7	Flow Instruments		1 Nos				
1.33.8	Control and Instrumentation cables		1 Lot				
1.33.9	Instrumentation Earthing materials with accessories		1 Lot				
1.33.10	Cable trays/supports for cable laying of requires size		1 Lot				
1.33.11	Equipment for Data transmission via Radio frequency		1 Lot				
	WTP						
1.33.12	Sedimentation Pump house						
1.33.13	PLC Panel with required hardware & software		1 Lot				
1.33.14	UPS with batteries		1 Lot				

Item 1	Description 2	Country of origin 3	Quantity 4	Unit Price ^a		Total Price ^a	Taxes and Duties
				Foreign Currency 5	CIP 6	Foreign Currency 7=4x6	Local Currency 8
1.33.15	Level Instruments		2 Nos				
1.33.16	Pressure Transmitter		7 Nos				
1.33.17	Flow Instruments		1 Nos				
1.33.18	Instrumentation Earthing materials with accessories		1 Lot				
	Clarifier Area						
1.33.19	PLC Panel with required hardware & software		1 Lot				
1.33.20	UPS with batteries		1 Lot				
1.33.21	Level Instruments		1 Nos				
1.33.22	Flow Instruments		1 Nos				

Item 1	Description 2	Country of origin 3	Quantity 4	Unit Price ^a		Total Price ^a	Taxes and Duties
				Foreign Currency 5	CIP 6	Foreign Currency 7=4x6	Local Currency 8
1.33.23	Instrumentation Earthing materials with accessories		1 Nos				
	Filter Area						
1.33.24	PLC Panel with required hardware & software		1 Lot				
1.33.25	UPS with batteries		1 Lot				
1.33.26	Remote Filter PLC(2 Nos) with hardware & software accessories		2 Lot				
1.33.27	Level Instruments		13 Nos				
1.33.28	Pressure Instruments includes differential pressure instruments		11 Nos				
1.33.29	Flow Instruments		2 Nos				
1.33.30	Instrumentation Earthing materials with accessories		1 Lot				

Item 1	Description 2	Country of origin 3	Quantity 4	Unit Price ^a		Total Price ^a	Taxes and Duties
				Foreign Currency 5	CIP 6	Foreign Currency 7=4x6	Local Currency 8
	Chemical Area						
1.33.31	PLC Panel with required hardware & software		1 Lot				
1.33.32	UPS with batteries		1 Lot				
1.33.33	Flow Instruments		3 Nos				
1.33.34	Level Instruments		9 Nos				
1.33.35	Pressure Transmitter		6 Nos				
1.33.36	Instrumentation Earthing materials with accessories		1 Lot				
	Sludge Area						
1.33.37	PLC Panel with required hardware & software		1 Lot				

Item 1	Description 2	Country of origin 3	Quantity 4	Unit Price ^a		Total Price ^a	Taxes and Duties
				Foreign Currency 5	CIP 6	Foreign Currency 7=4x6	Local Currency 8
1.33.38	UPS with batteries		1 Lot				
1.33.39	Flow Instruments		4 Nos				
1.33.40	Level Instruments		6 Nos				
1.33.41	Pressure Transmitter		4 Nos				
1.33.42	Instrumentation Earthing materials with accessories		1 Lot				
	Chlorine Area						
1.33.43	PLC Panel with required hardware & software		1 Lot				
1.33.44	UPS with batteries		1 Lot				
1.33.45	Flow Instruments		2 Nos				

Item 1	Description 2	Country of origin 3	Quantity 4	Unit Price ^a		Total Price ^a	Taxes and Duties
				Foreign Currency 5	CIP 6	Foreign Currency 7=4x6	Local Currency 8
1.33.46	Pressure Transmitter		12 Nos				
1.33.47	Instrumentation Earthing materials with accessories		1 Lot				
	Clear water pump house						
1.33.48	PLC Panel with required hardware & software		1 Lot				
1.33.49	UPS with batteries		1 Lot				
1.33.50	Level Instruments		4 Nos				
1.33.51	Temperature Instruments		7 Nos				
1.33.52	Vibration monitoring System		7 Nos				
1.33.53	Pressure Transmitter		9 Nos				

Item 1	Description 2	Country of origin 3	Quantity 4	Unit Price ^a		Total Price ^a		Taxes and Duties
				Foreign Currency 5	CIP 6	Foreign Currency 7=4x6	Local Currency 8	
1.33.54	Flow Instruments		2 Nos					
1.33.55	Instrumentation Earthing materials with accessories		1 Lot					
1.33.56	Equipment for Data transmission via Radio frequency		1 Lot					
1.33.57	Control and Instrumentation cables for WTP(includes accessories like glands, lugs, etc)		1 Lot					
1.33.58	Communication Cables inside WTP(fiber optic cable)		1 Lot					
1.33.59	Cable trays/supports for cable laying of requires size		1 Lot					
1.33.60	2 no's of SCADA operator station(Required Hard ware & Software Licensed) of WYP with control desk and its accessories		2 Lot					
1.33.61	2 no's of SCADA server station(Required Hard ware & Software Licensed) WTP with control desk and its accessories		2 Lot					
1.33.62	2 no's of SCADA operator station(Required Hard ware & Software Licensed) for BMC with control desk and its accessories		2 Lot					

Item	Description	Country of origin	Quantity	Unit Price ^a		Total Price ^a	Taxes and Duties
				Foreign Currency	CIP	Foreign Currency	Local Currency
1	2	3	4	5	6	7=4x6	8
1.33.63	Online water quality analyzers like Turbidity, pH, chlorine etc.		1 Lot				
	Distribution system (Phase 1)						
1.33.64	PLC Panel with required hardware & software		48 Lot				
1.33.65	UPS with batteries		48 Lot				
1.33.66	Level Transmitter		48 Nos				
1.33.67	Equipment for Data transmission via Radio frequency		48 Lot				
	WTP						
1.34	Supply and delivery of Equipment such as pipe connection to all the components of WTP including suitable valves and ,measuring devices, chemical dosing pipe lines etc complete pumps, motors, scrapping equipment's, suitable capacity of Filter Bach wash pumps, Air Blowers for filter back wash, suitable capacity of vacuum type chlorinators with motive water pumps for pre and post chlorination, Emergency tonner leakage control kit, exhaust equipment, scrubbing system with						

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Item	Description	Country of origin	Quantity	Unit Price ^a		Total Price ^a	Taxes and Duties
				Foreign Currency	CIP	Foreign Currency	Local Currency
1	2	3	4	5	6	7=4x6	8
	working and standby suction fan, absiration tower, scrubbing media tank, working and standby scrubbing media circulation pumps, EOT of suitable capacity where required, submerged mixers, solid bowl type centrifuge for sludge dewatering unit , agitator laboratory equipment etc complete suitable for 90 MLD Treatment Plant etc complete and as directed by Engineer						
1.34.1	Motorised 1300 mm dia DI Butterfly valves at inlet		1 No				
1.34.2	Motorised 800 mm DI Butterfly valves at Flash Mixer to Floculator		2 Nos				
1.34.3	Motorised 400 mm DI Butterfly valves at Filter out let		12 Nos				
1.34.4	Motorised 400 mm DI Butterfly valves at Flow Restrictor valve		12 Nos				
1.34.5	Motorised 500 mm DI Butterfly valves at Wash water inlet		12 Nos				
1.34.6	200 mm sluice valve for Drain valve for manual operation		12 Nos				
1.34.7	Motorised 250 mm DI Butterfly valves at scour Air inlet		12 Nos				

Item 1	Description 2	Country of origin 3	Quantity 4	Unit Price ^a		Total Price ^a	Taxes and Duties
				Foreign Currency 5	CIP 6	Foreign Currency 7=4x6	Local Currency 8
1.34.8	400 mm Globe valve for Air Purge line		12 Nos				
1.34.9	Motorised 500 mm DI Sluice valves at Wash water line from OHT		2 Nos				
1.34.10	Motorised 250 mm DI Butterfly valves at Air Line from Air Blower		6 Nos				
1.34.11	Motorised 300 mm DI Butterfly valves at Back wash Pump		2 Nos				
1.34.12	300 mm DI Isolation valve at Back wash Pump		2 Nos				
	Motorised Gates						
1.34.13	400 mm x 400 mm at Filter inlet		12 Nos				
1.34.14	600mm x 600 mm at Flash Mixer		2 Nos				
1.34.15	600 mm x 600 mm at Flocculator		4 Nos				

Item 1	Description 2	Country of origin 3	Quantity 4	Unit Price ^a		Total Price ^a	Taxes and Duties
				Foreign Currency 5	CIP 6	Foreign Currency 7=4x6	Local Currency 8
1.34.16	800 mm x 800 mm at Wash water outlet		6 Nos				
	Chlorine Dosing Pipelines						
1.34.17	PP Ball Valves - 400 mm dia at Line for Alum/PAC Dosing		6 Nos				
1.34.18	PP Ball Valves - 400 mm dia at Line for Poly Electrolyte Dosing		6 Nos				
1.34.19	PP Ball Valves - 400 mm dia at Line for Dewatering Poly		2 Nos				
1.34.20	PP Ball Valves - 400 mm dia at Line for Line for coagulating Poly in Waste recovery system		4 Nos				
	Pipes						
1.34.21	900 mm dia MS pipes -for Flash Mixer to Flocullator		20 m				
1.34.22	900 mm dia MS pipes -for Flash Mixer to Flocullator		30 m				

Item 1	Description 2	Country of origin 3	Quantity 4	Unit Price ^a		Total Price ^a	Taxes and Duties
				Foreign Currency 5	CIP 6	Foreign Currency 7=4x6	Local Currency 8
1.34.23	400 mm DI K9 pipe for Filtered water outlet		64 m				
1.34.24	200 mm DI K9 pipe for Air inlet		200 m				
1.35	Major Equipment in Water Treatment Plant Supply and Delivery of Major Equipment suitable for WTP components						
1.35.1	Slow speed Motor with Pedal arrangement for Flash Mixer		2 Set				
1.35.2	Flocculation and sludge scarping arrangement for Plate Settler and Flocculation/Clarifier Units		4 Set				
1.35.3	Filter Back wash pumps with required capacity		2 Nos				
1.35.4	Twin Lobe type Air Blowers for filter backwash with required capacity		2 Nos				
1.35.5	Monorail Hoist		2 Nos				

Item	Description	Country of origin	Quantity	Unit Price ^a		Total Price ^a	Taxes and Duties
				Foreign Currency	CIP	Foreign Currency	Local Currency
1	2	3	4	5	6	7=4x6	8
1.35.6	Filter Media (Sand & Gravel)		2610.14 Tonne				
	Chlorination System						
1.35.7	Vaccum Type Chlorinator for pre Chlorination Capacity 12 kg/hour each complete with motive water pumps and all other accessories		1 set				
	Vaccum Type Chlorinator for post Chlorination Capacity 12 kg/hour each complete with motive water pumps and all other accessories -2 Nos						
	Chlorine room safety kit- 5 Set						
	Emergency tonner leakage control Kit - 1 No						
	Exhaust Equipmet - 1 set						
	Scrubbing system with working and stand by suction fan, absorption tower, scrubbing media tank, working and standby scrubbing media circulation pumps etc- 1 Set						
1.36.8	EOT- 2 TONNE		2 Nos				

Item 1	Description 2	Country of origin 3	Quantity 4	Unit Price ^a		Total Price ^a	Taxes and Duties
				Foreign Currency 5	CIP 6	Foreign Currency 7=4x6	Local Currency 8
	Dirty Back wash Holding Tank						
1.36.9	Submerged Mixers		2 Nos				
1.36.10	Motor Submersible type pumps of 430 cu. m/hour capacity at 15 m head		3 Nos				
1.36.11	Mixers for coagulation polyelectrolyte solution preparation tank		2 Nos				
1.36.12	Coagulation Polyelectrolyte dosing (metering) Pumps		2 Nos				
	Thickner						
1.36.13	Equipment for mixing, flocculation coagulation, sludge scrapping and clarification		3 Set				
	Thickned sludge Tank						
1.36.14	Rotating Screw type positive displacement pumps for transferring sludge to dewatering units Capacity 25 Cu. M /hour at 30 m head with stand by		1 set				

Item 1	Description 2	Country of origin 3	Quantity 4	Unit Price ^a		Total Price ^a	Taxes and Duties
				Foreign Currency 5	CIP 6	Foreign Currency 7=4x6	Local Currency 8
1.36.15	Chain Pulle Block for Sludge Transfer Pumps		1 No				
	Centrifuge , Sludge Dewatering						
1.36.16	Solid Bowl Type Centrifuge Capacity 25Cu.M /hour slurry basis and 20 Ton dry solids per daywith standby		1 set				
	Dewatering Poly Solution Preparation & Dosing						
1.36.17	Agitator for solution preparation Tank		2 Nos				
1.36.18	Polyelectrolyte dosing (metering) Pumps rang 0.25lit/min to 2.5 lit /min		2 Nos				
1.36.19	Polyelectrolyte Solution Tanks (2000 Lit Capacity)		2 Nos				
	Coagulating Polyelectrolyte Solution Preparation and Dosing						
1.36.20	Agitator for solution preparation Tank		2 Nos				

Item 1	Description 2	Country of origin 3	Quantity 4	Unit Price ^a		Total Price ^a	Taxes and Duties
				Foreign Currency 5	CIP 6	Foreign Currency 7=4x6	Local Currency 8
1.36.21	Polyelectrolyte dosing (metering) Pumps rang 0.25lit/min to 2.5 lit /min		2 Nos				
1.36.22	Polyelectrolyte Solution Tanks (2000 Lit Capacity)		2 Nos				
	Alum/ PAC Dosing						
1.36.23	Agitator for solution preparation Tanks (replacement of Existing Mixers)		2 Nos				
1.36.24	Metering Pumps for ALUM/PAC dosing pump range 2.5lit/min to 25 lit/min at 10 m head		2 Nos				
	Polyelectrolyte Dosing						
1.36.25	Agitator for solution preparation Tanks (replacement of Existing Mixers)		2 Nos				
1.36.26	Metering Pumps for Polyelectrolyte dosing dosing range 0.25 lit/min to 2.5 lit/min		2 Nos				
1.36.27	Poly solution tanks 10000 lit cap.		2 Nos				
1.36.28	Laboratory Equipment		1 Set				

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Item	Description	Country of origin	Quantity	Unit Price ^a		Total Price ^a		Taxes and Duties	
				Foreign Currency	CIP	Foreign Currency	Local Currency		
1	2	3	4	5	6	7=4x6	8		
1.36.29	Supply and delivery of any other Equipment required to complete this project other than specified above. The contractor has to submit the list of such equipment along with cost of each equipment		1 set						
TOTAL Column 7 to be carried forward to Schedule No. 5: Grand Summary									

Name of Bidder _____

Signature of Bidder _____

Specify currencies in accordance with ITB 15.1 of the BDS. Create additional columns for up to a maximum of three foreign currencies if so required.

Country of Origin Declaration Form

Item	Description	Country

Note:

1. For a particular item, the bidder shall quote rate either in Schedule No 1 or Schedule No 2. If the bidder quotes rates for a item in both these Schedules then minimum rate mentioned in the Schedule No 1 or Schedule No 2 shall be considered for evaluation.
2. The Rates shall include all shipment, freight, loading and unloading charges up to the site.

PRICE PROPOSALS - PART A: DESIGN-BUILD COMPONENTS

Name of Project	Bihar Urban Development Investment Program – Tranche 2 (ADB Loan: Applied for / Project No. IND-41603-023)
Name of Employer:	Bihar Urban Infrastructure Development Corporation Limited (BUIDCo)
Contract Title:	Improvement of Water Supply System in Bhagalpur Municipal Corporation (BWSP 02)
Contract Package No:	BH/WS/02
Bidder's Name :	
Schedule No. 02: PLANT AND MANDATORY SPARE PARTS SUPPLIED FROM WITHIN THE EMPLOYER'S COUNTRY	

Item	Description	Quantity	Unit Price ^a		Total EXW Price ^a	GST & Other Taxes
			Local Currency	EXW Price	Local Currency	Local Currency
1	2	3	4	5	6=3x5	7
2.1	Supply and delivery of the Raw water pumps including all machineries and connecting pipes and specials etc for Raw water Pumping station.					
2.1.1	Vertical Turbine pumpset 1027 m3/hr, at an approximate head of 29m (the head shall be designed as per actual site condition, 980 rpm as per specifications.(4W + 2S), and Vertical Solid Shaft Motor suitable for the above pump 980 RPM ,including Soft starter suitable for the above motor. and pipe connections	6 set				
2.1.2	Supply and delivery of power actuated and manually operated CI D/F Sluice valves of reputed make (IS:14846 amended up to date) PN 1.0 class of following dia complete (including jointing material) including CI Dismantling joints all material as per Technical					

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Item	Description	Quantity	Unit Price ^a		Total EXW Price ^a	GST & Other Taxes
			Local Currency	EXW Price	Local Currency	Local Currency
1	2	3	4	5	6=3x5	7
	Specifications and as per direction of Engineer.					
2.1.2.1	500 mm Sluice valve	6 No				
2.1.2.2	900 mm Sluice valve	1 No				
2.2	Supply and delivery of dual plate check valves as per API:594 and API:598 of PN 1.0 rating of following dia (including jointing material), including all material as per Technical Specifications and as per direction of Engineer.	6 No				
	NRV 500mm					
2.3	Supply and delivery of C.I. D/F electrically actuated long body butterfly valves (IS: 13095) PN-1.0 class of following dia complete (including jointing material) including CI Dismantling joints, all material as per Technical Specifications and as per direction of Engineer.	6 No				
	Butterfly Valves 500mm					
2.4	Supply and delivery of glycerin filled Pressure gauge of following ranges - 0 t 0 6.0kg/cm ² with isolation valve and tap off pipe complete in all respect as per technical specification and as per direction of Engineer. 150mm Diameter	6 No				

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Item	Description	Quantity	Unit Price ^a		Total EXW Price ^a	GST & Other Taxes
			Local Currency	EXW Price	Local Currency	Local Currency
1	2	3	4	5	6=3x5	7
2.5	Supply and delivery of Electromagnetic Flow Meter etc. including Dismantling joints, all materials, CI/DI fittings etc. complete in all respect as per technical specification and as per direction of Engineer. 600 mm	2 No				
2.6	Supplying and delivery of Electrically Operated Travelling Crane (EOT) .Main girder & End Carriage fabricated from Rolled Steel Section, Gear Box for all motion, Electro Magnetic Friction Disc Type Brakes, all safety limit switches, LT wheels EN 9, Double Flanged 4No, with Sq. Cage motor of adequate rating (kW), duly painted mechanical cleaning and one coat of primer and two coat of synthetic paint and as per the direction of the Engineer.	2 No				
	EOT Crane with sufficient capacity to lift the raw water pumpsets with 9 m span and required lift.					
2.7	Supply delivery at site with necessary packing, receiving, unloading, shifting, storing of Non clog submersible pumping set of 2% Ni CI Cascading, Impeller CF 8M, Shaft SS 410, mechanical seal with 10M Power & Control cable , 5M Galvanized Chain, 10M, 50mm MS galvanized Guide pipe, Duck Foot Bend, with Guide wire SS 304 etc. complete with all respect as per specification - Discharge 160 cum/hr and head 8 to 10 M	2 No				
	15 HP Drainage submersible pump for removal of silt in the intake sump.					
2.8	Supply and delivery of Air Compressor and accessories required for cleaning of Conveyance pipe. The capacity of the compressor shall be adequate to clean the deposited silt in the connecting pipe.	1 No				

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Item	Description	Quantity	Unit Price ^a		Total EXW Price ^a	GST & Other Taxes
			Local Currency	EXW Price	Local Currency	Local Currency
1	2	3	4	5	6=3x5	7
2.9	S S Air line for Air compressor 50mm	327.6 kg				
2.10	Perforated air pipe for compressed air 50 mm dia	302.4 m				
2.11	Supply and delivery of CI screwed Air valves class PN-1.0 single ball of approved make, including screw down isolation valve of following dia, jointing material i.e. bolts, nuts, rubber insertions etc. complete including all material as per Technical Specifications and as per direction of Engineer.	2 No				
	50 mm screwed ends					
2.12	Supply and delivery of anti-vibration pads for foundation of motors	6 No				
2.13	Supply and delivery of clamps for column pipe with rubber bush to control the vibration of bowl assembly	6 No				
2.14	Electrical Substation and system at Intake works					
2.14.1	Supply and delivery of underground cable IS:7098 Part-II as per SBPDC specifications and of approved make suitable for working voltage up to and including 33 kV in aluminium conductors XLPE armoured category-I including excavation of 30cm x 150cm size trench as per IS:1255, 24cm thick under layer, refill earth in the					

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Item	Description	Quantity	Unit Price ^a		Total EXW Price ^a	GST & Other Taxes
			Local Currency	EXW Price	Local Currency	Local Currency
1	2	3	4	5	6=3x5	7
	remaining portion, making necessary connections including testing etc. as required of size given below and providing & making heat shrinkable type indoor/outdoor/straight through terminations for 33kV XLPE cables with required components.					
	Supply and delivery of 33kV Cable Tapping line from WTP to Raw Water Intake substation - 33kV 3Core 300Sq.mm cable.	2500 m				
2.15	Supply and delivery of the following equipment					
2.15.1	33 KV /0.433 KV substation at Raw Water Intake works					
2.15.1.1	36 KV VCB Panel- Supply and delivery of 800 A, 36 KV indoor type, triple pole metal clad truck mounted horizontal draw out type circuit breaker enclosed in cubicle made of CRCA sheet steel of minimum 3 mm thickness, comply with IS-13118, IEC-56 and confirming to M-2 class. The cubicle panel shall be vermin proof and dust-tight and shall be of folded type construction. The switchgear and control gears complete with all necessary supporting framework, nuts and bolts etc for securing the same to the floor conforming to IEC62271/100-200 with ingress protection as IP-5X. The Indoor panel switch gear (circuit breakers -3 Nos, CTs, -6 NosPTs-3 Nos etc) and control gear (relays, meters etc) shall be mounted on the same panel with principal parameters as under:	1 Set				
	No. of Poles - 3					

Item	Description	Quantity	Unit Price ^a		Total EXW Price ^a	GST & Other Taxes
			Local Currency	EXW Price	Local Currency	Local Currency
1	2	3	4	5	6=3x5	7
	Rated Voltage - 36 KV					
	Rated Insulation Level					
	Lightning Impulse voltage - 170 kV(Peak)					
	One minute Power Frequency withstand voltage - 70 kV(rms)					
	Frequency - 50 Hz					
	Rated normal current - 800 A					
	Short circuit breaking capacity - 25 kA					
	Short circuit withstand current - 25 kA for 3 secs					
	Max. operating time - less than 3 cycles					

Item	Description	Quantity	Unit Price ^a		Total EXW Price ^a	GST & Other Taxes
			Local Currency	EXW Price	Local Currency	Local Currency
1	2	3	4	5	6=3x5	7
	Minimum operations at full rated short circuit breaking currents - 100 Rated Breaking capacity					
	Symmetrical - 25 kA					
	Asymmetrical - As per relevant standards					
	Rated making capacity - 2.5x25 kA					
	Operating mechanism - motor operated spring charged closing mechanism Heater/lamp/socket - 240V					
	Control voltage - 110 VDC					
	Vacuum Circuit Breakers with three interrupters mounted on same carriage having fixed & moving contacts in sealed envelope with vacuum below 10 ⁻⁶ torr. Complete as per technical specifications and/or as directed by Engineer.					
	The VCB shall include specified cubicle panel, Aluminium / Copper bus bars, Insulator, sleeves, PT, CT etc complete in all respect.					
2.15.1.2	Supply and delivery of 33kV Control & Relay Panel duly mounted with protective relays, metering equipment etc. required for the satisfactory operation of 33kV side of 33/0.4kV Power Transformers. The C/R cubicles of	1 Set				

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Item	Description	Quantity	Unit Price ^a		Total EXW Price ^a	GST & Other Taxes
			Local Currency	EXW Price	Local Currency	Local Currency
1	2	3	4	5	6=3x5	7
	folded type construction with front base frame and door frame fabricated from CRCA sheet steel 10 SWG (3mm) thickness, while the side, roof & doors fabricated out of 14 SWG (2mm) thick CRCA sheet steel. The height of panel inclusive of base channel height of 102 mm of not more than 2312 mm, width of 750 mm or suitable to accommodate equipments and panel of depth 610 mm with dust & vermin proof and suitable for tropical use. The complete panel incorporates all necessary meters, instruments relays, control switches, indicating lamps, mimic buses, audible & visual alarms. The enclosure provide minimum degree of protection equivalent to IP-51 as per IS 2147. The relays offered conforming to latest issue of IS: 3231 & IS-8686. For over current & earth fault numerical relays be provided. In three phase protection relay, the setting for over current element be 50-200% (in steps of 10%)					
	and for earth fault element from 10 to 80% (in steps of 10%). Relay should also have features of self diagnosis, minimum last five abnormal events recording over current & earth fault including fault level & phase along with date & time, on line display of current and communicable with open protocol having RS-485 port. The panel be equipped with Annunciation scheme for indicating all annunciations equipped for the trip & non trip alarms. All indicating instruments of Switch Board type back connected suitable for flush mounting and provided with dust & vermin proof case for tropical use. All indicating instruments conforming to latest edition of					

Item	Description	Quantity	Unit Price ^a		Total EXW Price ^a	GST & Other Taxes
			Local Currency	EXW Price	Local Currency	Local Currency
1	2	3	4	5	6=3x5	7
	IS-2419/1963. complete as per technical specifications and /or as directed by engineer.					
	33 kV Relay Panel					
2.16	Supply and delivery of required no. of lightening arrester set complete with 600mm x 600mm x 6mm thick G.I. earthing plate, G.I. strip of size 25mmx5mm thick, G.I. Finial made of GI bar 25mm dia and 2m long.	1 Set				
	Lightning Impulse voltage - 170 kV(Peak)					
2.17	Supply and delivery of HT metering cubical panel as approved By DISCOMs fabricated out of 14 SWG CRCA sheet steel in two compartment & MS angle of size 60mmX6mm having provision for Following:	1 Set				
	(i) Provision for fixing Trivector Meter (To be supplied by DISCOMs)					
	(ii) Provision for fixing of combined CT PT Set (To be supplied by					
	DISCOMs)					
	(iii) TT Block					

Item	Description	Quantity	Unit Price ^a		Total EXW Price ^a	GST & Other Taxes
			Local Currency	EXW Price	Local Currency	Local Currency
1	2	3	4	5	6=3x5	7
	(iv) 6mm Bakelite sheet on all sides.					
2.18	Supply and delivery of Earthing materials for all substation equipment as per IS:3043 as per IEEE Standard 80-2000 (IEEE Guide for safety in AC Substation Grounding)	5 Set				
2.19	SF Rubber matting with one side corrugated as per IS specification 15652/2006 - 11 kV, 25 mm thick	12 Sq.m				
	Transformer	2 Set				
2.20	Supply and delivery of following rating out door type oil filled off circuit tap changer transformer with the following specification and confirming to IS 1180(Part 1 -2014) Thickness of transformer Tank (rolling tolerance as per IS)					
	No Load Voltage ratio : 33/0.433 kV					
	No. of phases / frequency : 3 Phases/ 50 Hz					
	Type : Core type, double copper wound					
	Cooling : ONAN					

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			Local Currency	EXW Price	Local Currency	Local Currency
1	2	3	4	5	6=3x5	7
	Vector Group : DYN11					
	Temperature rise (OIL/WINDING) : 40/50 deg C					
	Off circuit Taps on HV side in the steps of 2.5%,+5 % to -10%					
	Termination (HV) : Air filled cable end box suitable for 33 kV of adequate cable size					
	Termination (LV) : Air filled cable end box suitable for 1.1 kV of adequate cable size					
	The transformer shall be supplied with following fittings:					
	(i)Bochholz Relay					
	(ii)Conservator with drain valve					
	(iii)Magnetic Level Indicator					

Item	Description	Quantity	Unit Price ^a		Total EXW Price ^a	GST & Other Taxes
			Local Currency	EXW Price	Local Currency	Local Currency
1	2	3	4	5	6=3x5	7
	(iv) Silica gel breather with oil seal					
	(v) First filling of filtered oil as per IS : 335 including make up fill during installation of transformer plus 10% extra oil					
	(vi) off circuit switch					
	(vii) Lifting lugs					
	(viii) Earthing terminal- 2 nos.					
	(ix) Thermometer pocket					
	(x) Air release plug					
	(xi) Inspection cover					
	(xii) Top filter valve - 1 no.					

Item	Description	Quantity	Unit Price ^a		Total EXW Price ^a	GST & Other Taxes
			Local Currency	EXW Price	Local Currency	Local Currency
1	2	3	4	5	6=3x5	7
	(xiii) Radiator with top & bottom shut off valves					
	(xiv) 100 mm dial magnetic oil level guage with max. pointer & with alarm contacts					
	(xv) Rating & Diagram plate					
	(xvi) Bi-directional Plain/ Flanged Rollers					
	(xvii) 150 mm dial Winding temperature indicator with max pointer and alarm & trip contacts					
	(xviii) 150 mm dial Oil temperature indicator with max pointer and alarm & trip contacts					
	(xix) Disconnecting facility of HV Cable box					
	Transformers descibed as above and as per the following continuous rating					
	1250kVA Transformer (1250KVA capacity of transformer is minimum, however if the design indicates a higher capacity shall be considered).					

Item	Description	Quantity	Unit Price ^a		Total EXW Price ^a	GST & Other Taxes
			Local Currency	EXW Price	Local Currency	Local Currency
1	2	3	4	5	6=3x5	7
2.21	Supply and delivery of Automatic Power factor Improvement Panel to improve the power factor up to 0.95 lagging. This will include panel cubical, Microprocessor based intelligent power factor correction relay complete in all respect.	1 Set				
2.22	Supply and delivery of Rubber matting with one side corrugated as per IS specification 15652/2006 - 11 kV, 25 mm thick	15 Sq.m				
	LT Panel RWPS					
2.23	Supply and delivery of wall/free standing floor mounted dust and vermin proof compartmentalized cubical panel for 0.415kV including the suitable size of electrolytic grade Copper Bus Bars, insulators etc., for the following feeders:	1 Set				
	1. 2 Nos. Incoming ACB from the transformer- This will be provided with (but not limited to) Digital Multifunction meter compatible to SCADA, metering, Protection CT's, IDMT 3O/C&1 E/F, indicating lamps, control fuse , wiring etc. complete in all respect					
	2. 1No. ACB for Bus Coupler. This will be provided with (but not limited to) without release Protection CT's, IDMT 3 O/C & 1 E/F, Indicating Lamps, Control Fuses and wiring etc. complete in all respect.					
	3. MCCB panels for APFC Panel, Pumping plant,					
	Above panels shall be provided with- (but not limited to) metering CTs, multi function meter compatible to SCADA, Ampermeter with SS, Voltmeter with SS,					

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			Local Currency	EXW Price	Local Currency	Local Currency
1	2	3	4	5	6=3x5	7
	Indicating Lamps, Control Fuse, wiring etc. complete in all respect. (Minimum No.8)					
	4.MCCB panels for auxiliary and spare (Minimum No.6)					
	Above panels shall be provided with- (but not limited to) metering CTs, multi function meter compatible to SCADA, Amperemeter with SS, Voltmeter with SS, Indicating Lamps, Control Fuse, wiring etc. complete in all respect. (Minimum No.8)					
	MCCB shall be provided with shunt release, Under voltage release and Earth fault module.					
2.24	Supply and delivery of Bus Trunking arrangement in convenient sections complete with housing of galvanized sheet steel of minimum 1.5mm thickness, Copper bus bar for use of 3phase-4Wire 415Volt A.C supply with degree of protection ip-42 for the minimum 2000A rating including jointing of Section, flexible joints, expansion joints and earthing with 2 runs of aluminum strips,etc. From Transformer LT to incoming of LT Panel.	1 Lot				
2.25	Supply and delivery of XLPE insulated sheathed cable of 1.1 kV grade with aluminium conductor Armoured of IS:7098-I/1554-1 approved make in ground as per IS:1255	1 Lot				
2.26	Supply and delivery of Battery Charger, battery bank of min 150 AH capacity comprising SMF/VRLA batteries, MS / Teakwood battery stand, interconnect wiring etc. as required complete in all respect.	1 set				

Item	Description	Quantity	Unit Price ^a		Total EXW Price ^a	GST & Other Taxes
			Local Currency	EXW Price	Local Currency	Local Currency
1	2	3	4	5	6=3x5	7
2.27	Supply and delivery of Earthing materials of all equipment as per IS:3043. and requirement of IER.	1 Job				
2.28	Supply and delivery of the settled water pumping station machineries and connected pipes and specials etc for settled water sedimentation Pumping station.					
2.28.1	Vertical Turbine pumpset 1027 m ³ /hr, at an approximate head of 8m (the head shall be designed as per actual site condition, 980 rpm as per specifications.(4W + 2S) and Vertical Solid Shaft Motor suitable for the above pump 980 RPM including soft starter for the pumps, and MS pipe connections	6 set				
2.28.2	Providing, lowering, laying, aligning, fixing in position in pipe line, power actuated and manually operated CI D/F Sluice valves of reputed make (IS:14846 amended up to date) PN 1.0 class of following dia complete (including jointing material) including CI Dismantling joints all material, labour, testing and commissioning along with pipe line as per Technical Specifications and as per direction of Engineer.	6 No				
	450mm					
2.28.3	Supply and delivery of dual plate check valves as per API:594 and API:598 of PN 1.0 rating of following dia (including jointing and jointing material), including all material, as per Technical Specifications and as per direction of Engineer.	6 No				

Item	Description	Quantity	Unit Price ^a		Total EXW Price ^a	GST & Other Taxes
			Local Currency	EXW Price	Local Currency	Local Currency
1	2	3	4	5	6=3x5	7
	NRV 450mm					
2.28.4	Supply and delivery of DI D/F electrically actuated long body butterfly valves (IS: 13095) PN-1.0 class of following dia complete (including jointing material) including all material Dismantling joints as per Technical Specifications and as per direction of Engineer.					
2.28.4.1	450mm	6 No				
2.28.4.2	900mm	1 No				
2.28.5	Providing, installation, testing and commissioning of glycerin filled Pressure gauge of following ranges with isolation valve and tap off pipe complete in all respect as per technical specification and as per direction of Engineer.	6 No				
	Glycerine filled Pressure Gauge 0 to 6.0 kg/cm ² 150mm dia.					
2.28.6	Supply and delivery of Electrically Operated Travelling Crane (EOT) .Main girder & End Carriage fabricated from Rolled Steel Section, Gear Box for all motion, Electro Magnetic Friction Disc Type Brakes, all safety limit switches, LT wheels EN 9, Double Flanged 4No, with Sq. Cage motor of adequate rating (kW), duly	1 No				

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Item	Description	Quantity	Unit Price ^a		Total EXW Price ^a	GST & Other Taxes
			Local Currency	EXW Price	Local Currency	Local Currency
1	2	3	4	5	6=3x5	7
	<p>1. painted mechanical cleaning and one coat of primer and two coat of synthetic paint and as per the direction of the Engineer.</p> <p>EOT Crane with sufficient capacity to lift the settled water pumpsets with 9 m span and required lift</p>					
2.28.7	<p>Supply and delivery of wall/free standing floor mounted dust and vermin proof compartmentalized cubical panel for 0.415kV including the suitable Supply and delivery of wall /free standing floor mounted dust and vermin proof compartmentalized cubical panel for 0.415kV including the suitable size of electrolytic grade Copper Bus Bars, insulators etc., for the following feeders:</p>	1 Set				
	1. 1 No. Incoming MCCB -This shall be provided with- (but not limited to) metering CTs, multi function meter compatible to SCADA, Ampere meter with SS, Voltmeter with SS, Indicating Lamps, Control Fuse, wiring etc. complete in all respect.					
	2. MCCB panels for Pumping plant Automatic Star Delta Starter 6 Nos.					
	Above panels shall be provided with- (but not limited to) metering CTs, multi function meter compatible to SCADA, Ampere meter with SS, Voltmeter with SS, Indicating Lamps, Control Fuse, wiring etc. complete in all respect. (Minimum No.8)					
	3.MCCB panels for auxiliary and spare-					

Item	Description	Quantity	Unit Price ^a		Total EXW Price ^a	GST & Other Taxes
			Local Currency	EXW Price	Local Currency	Local Currency
1	2	3	4	5	6=3x5	7
	Above panels shall be provided with- (but not limited to) metering CTs, multi function meter compatible to SCADA, Ampere meter with SS, Voltmeter with SS, Indicating Lamps, Control Fuse, wiring etc. complete in all respect. (Minimum No.3)					
	MCCB shall be provided with shunt release, Under voltage release and Earthfault module.					
2.28.8	Supply and delivery of Rubber matting with one side corrugated as per IS specification 15652/2006 - 11 kV, 25 mm thick for the Panel	1 set				
2.28.9	Supply and delivery of XLPE insulated sheathed cable of 1.1 kV grade with aluminium conductor Armoured of IS:7098-I/1554-1 approved make in ground as per IS:1255 etc. of required size and length for the pumping stations.	1 Lot				
2.28.10	Supply and delivery of Earthing of all equipment as per IS:3043 and requirement of IER.	1 Set				
2.28.11	Supply and delivery of charged ABC type fire extinguisher with nut, bolts etc as required.5 KG	4 No				
2.29	Supply and delivery of the Clear water pumping station machineries including connected pipes and specials etc complete at WTP					

Item	Description	Quantity	Unit Price ^a		Total EXW Price ^a	GST & Other Taxes
			Local Currency	EXW Price	Local Currency	Local Currency
1	2	3	4	5	6=3x5	7
2.29.1	Vertical Turbine pumpset 978 m3/hr, at an approximate head of 38m (the head shall be designed as per actual site condition, 980 rpm as per specifications. (5W + 2S) and Vertical solid shaft Motor suitable for the pumps including the soft starter suitable for the motor of the pump and connecting pipes	7 set				
2.29.2	Supply and delivery of power actuated and manually operated DI D/F Sluice valves of reputed make (IS:14846 amended up to date) PN 1.0 class of following dia complete (including jointing material) including CI Dismantling joint and all material as per Technical Specifications and as per direction of Engineer.					
2.29.2.1	450mm					
2.29.2.2	450mm	7 No				
2.29.2.3	700mm	1 No				
2.29.3	Supply and delivery of DI dual plate check valves as per API:594 and API:598 of PN 1.0 rating of following dia with jointing material including DI Dismantling joint all material, as per Technical Specifications and as per direction of Engineer.					
2.29.3.1	NRV 450mm	7 No				

Item	Description	Quantity	Unit Price ^a		Total EXW Price ^a	GST & Other Taxes
			Local Currency	EXW Price	Local Currency	Local Currency
1	2	3	4	5	6=3x5	7
2.29.3.2	NRV 700mm	2 No				
2.29.4	Supply and delivery of DI D/F electrically operated long body butterfly valves (IS: 13095) PN-1.0 class of following dia complete (including jointing material) including DI Dismantling joint, all material as per Technical Specifications and as per direction of Engineer.					
2.29.4.1	450mm	7 No				
2.29.4.2	700mm	2 No				
2.29.5	Supply and delivery of glycerin filled Pressure gauge of following ranges with isolation valve and tap off pipe complete in all respect as per technical specification and as per direction of Engineer.	7 No				
	Glycerine filled Pressure Gauge 0 to 10kg/cm² 150mm diameter					
2.29.6	Supply and of Electromagnetic Flow Meter etc. including all materials and making connection with pipeline required for Electromagnetic Flow Meter as per technical specification and as per direction of Engineer.					
2.29.6.1	EMF 600 mm	2 No				

Item	Description	Quantity	Unit Price ^a		Total EXW Price ^a	GST & Other Taxes
			Local Currency	EXW Price	Local Currency	Local Currency
1	2	3	4	5	6=3x5	7
2.29.6.2	EMF 400 mm	22 No				
2.29.6.3	EMF 300 mm	20 No				
2.29.6.4	EMF 200 mm	2 No				
2.29.6.5	EMF 150 mm	1 No				
2.29.7	Supply and delivery of Electrically Operated Travelling Crane (EOT). Main girder & End Carriage fabricated from Rolled Steel Section, Gear Box for all motion, Electro Magnetic Friction Disc Type Brakes, all safety limit switches, LT wheels EN 9, Double Flanged 4No, with Sq. Cage motor of adequate rating (kW), duly painted mechanical cleaning and one coat of primer and two coat of synthetic paint and as per the direction of the Engineer. Add extra for additional per metre lift.	1 No				
	EOT Crane 10T, 9m span, 9m lift.					
2.30	Electrical Substation and system					
2.30.1	33kV Single Circuit Lattice Structure	1 set				

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Item	Description	Quantity	Unit Price ^a		Total EXW Price ^a	GST & Other Taxes
			Local Currency	EXW Price	Local Currency	Local Currency
1	2	3	4	5	6=3x5	7
2.30.2	Supply and delivery of 33 kV Double Pole structure made of two nos. 10 m long PCC poles & 7 nos. MS Channel size 100x50x6mm with GO switch, DO fuse set and lightning arrestors with following specifications. GO: Off load type gang operated three pole Horizontal type switch suitable for 33kV, 800A, 3phase central post rotating double break isolator complete with MS Hardware, copper moving & fixed contacts, assembly of 9 Nos. Post Insulators, GI pipe of suitable length for operation. DO: 3 Nos. Horizontal/Vertical mounted 33kV Horn Gap fuse set / Drop Out fuse set, 33kV barrel fuses mounted on 6 Nos. Post insulators. LA: 3 piece non linear resistor type lightening arrester of approved make suitable for 3 wire, 33kV oh line with rated voltage 30kV rms & nominal discharge current rating of 10 kA & complete with galvanized clamping arrangement, GI bolts, nuts, washers etc. as required. Jumpers:3 Nos. ACSR Dog Conductor mounted on post type insulators as required.	2 set				
	The GO shall be operated by hand operated liver properly earthed with provision for locking mounted at 3'. Complete as per technical specifications and /or as directed by the Engineer.					
2.30.3	36 KV VCB Panel- Supply and delivery of 800 A, 36 KV indoor type, triple pole metal clad truck mounted horizontal draw out type circuit breaker enclosed in cubicle made of CRCA sheet steel of minimum 3 mm thickness, comply with IS-13118, IEC-56 and confirming to M-2 class. The cubicle panel shall be vermin proof and dust-tight and shall be of folded type construction. The switchgear and control gears complete with all necessary supporting framework, nuts and bolts etc for securing the same to the floor conforming to IEC62271/100-200 with	1 Set				

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Item	Description	Quantity	Unit Price ^a		Total EXW Price ^a	GST & Other Taxes
			Local Currency	EXW Price	Local Currency	Local Currency
1	2	3	4	5	6=3x5	7
	ingress protection as IP-5X. The Indoor panel switch gear (circuit breakers-3 Nos, CTs-6 Nos, PTs -3 Nos etc) and control gear (relays, meters etc) shall be mounted on the same panel					
	No. of Poles - 3					
	Rated Voltage - 36 KV					
	Rated Insulation Level					
	Lightning Impulse voltage - 170 kV(Peak)					
	One minute Power Frequency withstand voltage - 70 kV(rms)					
	Frequency - 50 Hz					
	Rated normal current - 800 A					

Item	Description	Quantity	Unit Price ^a		Total EXW Price ^a	GST & Other Taxes
			Local Currency	EXW Price	Local Currency	Local Currency
1	2	3	4	5	6=3x5	7
	Short circuit breaking capacity - 25 kA					
	Short circuit withstand current - 25 kA for 3 secs					
	Max. operating time - less than 3 cycles					
	Minimum operations at full rated short circuit breaking currents - 100 Rated Breaking capacity					
	Symmetrical - 25 kA					
	Asymmetrical - As per relevant standards					
	Rated making capacity - 2.5x25 kA					
	Operating mechanism - motor operated spring charged closing mechanism Heater/lamp/socket - 240V					
	Control voltage - 110 VDC					

Item	Description	Quantity	Unit Price ^a		Total EXW Price ^a	GST & Other Taxes
			Local Currency	EXW Price	Local Currency	Local Currency
1	2	3	4	5	6=3x5	7
	Vacuum Circuit Breakers with three interrupters mounted on same carriage having fixed & moving contacts in sealed envelop with vacuum below 10 ⁻⁶ torr. complete as per technical specifications and/or as directed by Engineer.					
	The VCB shall include specified cubicle panel, Aluminium / Copper bus bars, Insulator, sleeves, PT, CT					
2.30.4	Supply, installation, testing & commissioning of 33kV Control & Relay Panel duly mounted with protective relays, metering equipment etc. required for the satisfactory operation of 33kV side of 33/0.4kV Power Transformers.	1 No				
2.30.5	Supply and delivery of HT metering cubical panel as approved By DISCOMs fabricated out of 14 SWG CRCA sheet steel in two compartment & MS angle of size 60mmX6mm having provision for Following:	1 No				
	(i) Provision for fixing Trivector Meter (To be supplied by DISCOMs)					
	(ii) Provision for fixing of combined CT PT Set (To be supplied by					
	DISCOMs)					
	(iii) TT Block					

Item	Description	Quantity	Unit Price ^a		Total EXW Price ^a	GST & Other Taxes
			Local Currency	EXW Price	Local Currency	Local Currency
1	2	3	4	5	6=3x5	7
	(iv) 6mm Bakelite sheet on all sides.					
	Metering Cubicle					
2.30.6	Supply and delivery of lightening arrester set complete with 600mm x 600mm x 6mm thick G.I. earthing plate, G.I. strip of size 25mmx5mm thick	1 set				
	Lightning Impulse voltage - 170 kV(Peak)					
2.30.7	Supply and delivery of all substation equipment as per IS:3043 as per IEEE Standard 80-2000 (IEEE Guide for safety in AC Substation Grounding)	1 Job				
2.30.8	Supply and delivery of following size earth wire/strip in horizontal or vertical run in ground/surface/recess	250 m				

Item	Description	Quantity	Unit Price ^a		Total EXW Price ^a	GST & Other Taxes
			Local Currency	EXW Price	Local Currency	Local Currency
1	2	3	4	5	6=3x5	7
	25mm x 3mm G.I.Strip					
	Frequency - 50 Hz					
2.30.9	Supply and delivery of SF Rubber matting with one side corrugated as per IS specification 15652/2006 - 11 kV	12 Sq.m				
	Rated normal current - 800 A					
2.31	Transformer	2 set				
2.31.1	Supply and delivery of following rating out door type oil filled off circuit tap changer transformer with the following specification and confirming to IS 1180(Part 1 -2014) Thickness of transformer Tank (rolling tolerance as per IS)					
	No Load Voltage ratio : 33/0.433 kV					
	No. of phases / frequency : 3 Phases/ 50 Hz					
	Type : Core type, double copper wound					

Item	Description	Quantity	Unit Price ^a		Total EXW Price ^a	GST & Other Taxes
			Local Currency	EXW Price	Local Currency	Local Currency
1	2	3	4	5	6=3x5	7
	Cooling : ONAN					
	Vector Group : DYN11					
	Temperature rise (OIL/WINDING) : 40/50 deg C					
	Off circuit Taps on HV side in the steps of 2.5%,+5 % to -10%					
	Termiantion (HV) : Air filled cable end box suitable for 33 kV of adequate cable size					
	Termiantion (LV) : Air filled cable end box suitable for 1.1 kV of adequate cable size					
	The transformer shall be supplied with following fittings:					
	(i)Bochholz Relay					
	(ii)Conservator with drain valve					

Item	Description	Quantity	Unit Price ^a		Total EXW Price ^a	GST & Other Taxes
			Local Currency	EXW Price	Local Currency	Local Currency
1	2	3	4	5	6=3x5	7
	(iii)Magnetic Level Indicator					
	(iv)Silica gel breather with oil seal					
	(v) First filling of filtered oil as per IS : 335 including make up fill during installation of transformer plus 10% extra oil					
	(vi) off circuit switch					
	(vii) Lifting lugs					
	(viii) Earthing terminal- 2 nos.					
	(ix) Thermometer pocket					
	(x) Air release plug					
	(xi) Inspection cover					

Item	Description	Quantity	Unit Price ^a		Total EXW Price ^a	GST & Other Taxes
			Local Currency	EXW Price	Local Currency	Local Currency
1	2	3	4	5	6=3x5	7
	(xii) Top filter valve - 1 no.					
	(xiii) Radiator with top & bottom shut off valves					
	(xiv) 100 mm dial magnetic oil level guage with max. pointer & with alarm contacts					
	(xv) Rating & Diagram plate					
	(xvi) Bi-directional Plain/ Flanged Rollers					
	(xvii) 150 mm dial Winding temperature indicator with max pointer and alarm & trip contacts					
	(xviii) 150 mm dial Oil temperature indicator with max pointer and alarm & trip contacts					
	(xix) Disconnecting facility of HV Cable box					
	Transformers described as above and as per the following continuous rating					

Item	Description	Quantity	Unit Price ^a		Total EXW Price ^a	GST & Other Taxes
			Local Currency	EXW Price	Local Currency	Local Currency
1	2	3	4	5	6=3x5	7
	2000kVA Transformer (2000KVA capacity of transformer is minimum, however if the design indicates a higher capacity shall be considered).					
2.31.2	Supply and delivery of Automatic Power factor Improvement Panel to improve the power factor up to 0.95 lagging. This will include panel cubical, Microprocessor based intelligent power factor correction relay complete in all respect.	1 Set				
2.31.3	Supply and delivery of SF Rubber matting with one side corrugated as per IS specification 15652/2006	12 Sq.m				
	Rated making capacity - 2.5x25 kA					
2.32	LT Panel CWPS	1 Set				
2.32.1	Supply and delivery of wall/free standing floor mounted dust and vermin proof compartmentalised cubical panel for 0.415kV including the suitable size of electrolytic grade Copper Bus Bars, insulators etc., for the following feeders:					
	1. 2 Nos. Incoming ACB from the transformer- This will be provided with (but not limited to) Digital Multifunction meter compatible to SCADA, metering, Protection CT's, IDMT 3O/C&1 E/F, indicating lamps, control fuse , wiring etc. complete in all respect					
	2. 1No. ACB for Bus Coupler. This will be provided with (but not limited to) without release Protection CT's, IDMT 3 O/C & 1 E/F, Indicating Lamps, Control Fuses and wiring etc. complete in all respect.					

Item	Description	Quantity	Unit Price ^a		Total EXW Price ^a	GST & Other Taxes
			Local Currency	EXW Price	Local Currency	Local Currency
1	2	3	4	5	6=3x5	7
	3. MCCB panels for APFC Panel, Pumping plant,					
	Above panels shall be provided with- (but not limited to) metering CTs, multi function meter compatible to scada, Ampermeter with SS, Voltmeter with SS, Indicating Lamps, Control Fuse, wiring etc. complete in all respect. (Minimum No.9)					
	4.MCCB panels for auxiliary and spare (Minimum No.6)					
	Above panels shall be provided with- (but not limited to) metering CTs, multi function meter compatible to scada, Ampermeter with SS, Voltmeter with SS, Indicating Lamps, Control Fuse, wiring etc. complete in all respect.					
	MCCB shall be provided with shunt release, Under voltage release and Earth fault module.					
2.32.2	Supply and delivery of Bus Trunking arrangement in convenient sections complete with housing of galvanized sheet steel of minimum 1.5mm thickness, Copper bus bar for use of 3phase-4Wire 415Volt A.C supply with degree of protection ip-42 for the minimum 2000A rating and earthing with 2 runs of aluminum strips,etc. From Transformer LT to incoming of LT Panel.	1 Job				
2.32.3	Supply and delivery of XLPE insulated sheathed cable of 1.1 kV grade with aluminium conductor Armoured of IS:7098-I/1554-1 approved make in ground as per	1 Job				

Bihar Urban Development Investment Program

Improvement of Water Supply System in Bhagalpur Municipal Corporation (BH/WS/02)

Item	Description	Quantity	Unit Price ^a		Total EXW Price ^a	GST & Other Taxes
			Local Currency	EXW Price	Local Currency	Local Currency
1	2	3	4	5	6=3x5	7
	IS:1255					
	of required size and length for the pumping stations.					
2.32.4	Supply and delivery of Battery Charger, battery bank of min 150 AH capacity comprising SMF/VRLA batteries, MS / Teakwood battery stand, interconnect wiring etc. as required complete in all respect.	1 set				
2.32.5	Supply and delivery of internal and external lighting of all campus including Raw water pumping station, Sedimentation Pumping Station, Clear Water pumping Station and all other buildings to be constructed under this tender. The illumination level to be provided shall be in accordance to the lux level mentioned elsewhere in technical specifications. All lights shall be LED.	1 Job				
2.32.6	Supply and delivery of 3pin 5Amp, and 6 pin15Amp light and power points as per requirement to be decided by the Engineer In charge for all buildings under this tender.	1 Job				
2.32.7	Supply and delivery of Ceiling fans as per requirement to be decided by the Engineer Incharge for all buildings under this tender.	1 Lot				
2.32.8	Supply and delivery of Ventilation arrangement for all the buildings proposed under this tender according to requirement narrated in technical Specifications and decided by the engineer In charge.	1 Lot				
2.32.9	Supply and delivery of spares , tools and other equipment for the Raw water pumping station, settled water pump house and clear water pump house	1 lot				

Item	Description	Quantity	Unit Price ^a		Total EXW Price ^a	GST & Other Taxes
			Local Currency	EXW Price	Local Currency	Local Currency
1	2	3	4	5	6=3x5	7
2.33	Automation and equipment					
	Supply and delivery of the SCADA system with the following equipment					
	For Raw water Pump House					
2.33.1	PLC Panel with required hardware & software	1 Lot				
2.33.2	UPS with batteries	1 Lot				
2.33.3	Level Instruments	2 Nos				
2.33.4	Temperature Instruments	6 Nos				
2.33.5	Vibration monitoring System	6 Nos				
2.33.6	Pressure Transmitter	7 Nos				

Item	Description	Quantity	Unit Price ^a		Total EXW Price ^a	GST & Other Taxes
			Local Currency	EXW Price	Local Currency	Local Currency
1	2	3	4	5	6=3x5	7
2.33.7	Flow Instruments	1 Nos				
2.33.8	Control and Instrumentation cables	1 Lot				
2.33.9	Instrumentation Earthing materials with accessories	1 Lot				
2.33.10	Cable trays/supports for cable laying of requires size	1 Lot				
2.33.11	Equipment for Data transmission via Radio frequency	1 Lot				
	WTP					
2.33.12	Sedimentation Pump house					
2.33.13	PLC Panel with required hardware & software	1 Lot				
2.33.14	UPS with batteries	1 Lot				

Item	Description	Quantity	Unit Price ^a		Total EXW Price ^a	GST & Other Taxes
			Local Currency	EXW Price	Local Currency	Local Currency
1	2	3	4	5	6=3x5	7
2.33.15	Level Instruments	2 Nos				
2.33.16	Pressure Transmitter	7 Nos				
2.33.17	Flow Instruments	1 Nos				
2.33.18	Instrumentation Earthing materials with accessories	1 Lot				
	Clarifier Area					
2.33.19	PLC Panel with required hardware & software	1 Lot				
2.33.20	UPS with batteries	1 Lot				
2.33.21	Level Instruments	1 Nos				
2.33.22	Flow Instruments	1 Nos				

Item	Description	Quantity	Unit Price ^a		Total EXW Price ^a	GST & Other Taxes
			Local Currency	EXW Price	Local Currency	Local Currency
1	2	3	4	5	6=3x5	7
2.33.23	Instrumentation Earthing materials with accessories	1 Nos				
	Filter Area					
2.33.24	PLC Panel with required hardware & software	1 Lot				
2.33.25	UPS with batteries	1 Lot				
2.33.26	Remote Filter PLC(2 Nos) with hardware & software accessories	2 Lot				
2.33.27	Level Instruments	13 Nos				
2.33.28	Pressure Instruments includes differential pressure instruments	11 Nos				
2.33.29	Flow Instruments	2 Nos				
2.33.30	Instrumentation Earthing materials with accessories	1 Lot				

Item	Description	Quantity	Unit Price ^a		Total EXW Price ^a	GST & Other Taxes
			Local Currency	EXW Price	Local Currency	Local Currency
1	2	3	4	5	6=3x5	7
	Chemical Area					
2.33.31	PLC Panel with required hardware & software	1 Lot				
2.33.32	UPS with batteries	1 Lot				
2.33.33	Flow Instruments	3 Nos				
2.33.34	Level Instruments	9 Nos				
2.33.35	Pressure Transmitter	6 Nos				
2.33.36	Instrumentation Earthing materials with accessories	1 Lot				
	Sludge Area					
2.33.37	PLC Panel with required hardware & software	1 Lot				

Item	Description	Quantity	Unit Price ^a		Total EXW Price ^a	GST & Other Taxes
			Local Currency	EXW Price	Local Currency	Local Currency
1	2	3	4	5	6=3x5	7
2.33.38	UPS with batteries	1 Lot				
2.33.39	Flow Instruments	4 Nos				
2.33.40	Level Instruments	6 Nos				
2.33.41	Pressure Transmitter	4 Nos				
2.33.42	Instrumentation Earthing materials with accessories	1 Lot				
	Chlorine Area					
2.33.43	PLC Panel with required hardware & software	1 Lot				
2.33.44	UPS with batteries	1 Lot				
2.33.45	Flow Instruments	2 Nos				

Item	Description	Quantity	Unit Price ^a		Total EXW Price ^a	GST & Other Taxes
			Local Currency	EXW Price	Local Currency	Local Currency
1	2	3	4	5	6=3x5	7
2.33.46	Pressure Transmitter	12 Nos				
2.33.47	Instrumentation Earthing materials with accessories	1 Lot				
	Clear water pump house					
2.33.48	PLC Panel with required hardware & software	1 Lot				
2.33.49	UPS with batteries	1 Lot				
2.33.50	Level Instruments	4 Nos				
2.33.51	Temperature Instruments	7 Nos				
2.33.52	Vibration monitoring System	7 Nos				
2.33.53	Pressure Transmitter	9 Nos				

Item	Description	Quantity	Unit Price ^a		Total EXW Price ^a	GST & Other Taxes
			Local Currency	EXW Price	Local Currency	Local Currency
1	2	3	4	5	6=3x5	7
2.33.54	Flow Instruments	2 Nos				
2.33.55	Instrumentation Earthing materials with accessories	1 Lot				
2.33.56	Equipment for Data transmission via Radio frequency	1 Lot				
2.33.57	Control and Instrumentation cables for WTP(includes accessories like glands, lugs, etc)	1 Lot				
2.33.58	Communication Cables inside WTP(fiber optic cable)	1 Lot				
2.33.59	Cable trays/supports for cable laying of requires size	1 Lot				
2.33.60	2 no's of SCADA operator station(Required Hard ware & Software Licensed) of WYP with control desk and its accessories	2 Lot				
2.33.61	2 no's of SCADA server station(Required Hard ware & Software Licensed) WTP with control desk and its accessories	2 Lot				
2.33.62	2 no's of SCADA operator station(Required Hard ware & Software Licensed) for BMC with control desk and its accessories	2 Lot				

Item	Description	Quantity	Unit Price ^a		Total EXW Price ^a	GST & Other Taxes
			Local Currency	EXW Price	Local Currency	Local Currency
1	2	3	4	5	6=3x5	7
2.33.63	Online water quality analyzers like Turbidity, pH, chlorine etc.	1 Lot				
	Distribution system (Phase 1)					
2.33.64	PLC Panel with required hardware & software	48 Lot				
2.33.65	UPS with batteries	48 Lot				
2.33.66	Level Transmitter	48 Nos				
2.33.67	Equipment for Data transmission via Radio frequency	48 Lot				
	WTP					
2.34	Supply and delivery of Equipment such as pipe connection to all the components of WTP including suitable valves and ,measuring devices, chemical dosing pipe lines etc complete pumps, motors, scrapping equipment's, suitable capacity of Filter Bach wash pumps, Air Blowers for filter back wash, suitable capacity of vacuum type chlorinators with motive water pumps for pre and post chlorination, Emergency tonner leakage control kit, exhaust equipment, scrubbing system with					

Bihar Urban Development Investment Program

Improvement of Water Supply System in Bhagalpur Municipal Corporation (BH/WS/02)

Item	Description	Quantity	Unit Price ^a		Total EXW Price ^a	GST & Other Taxes
			Local Currency	EXW Price	Local Currency	Local Currency
1	2	3	4	5	6=3x5	7
	working and standby suction fan, absorption tower, scrubbing media tank, working and standby scrubbing media circulation pumps, EOT of suitable capacity where required, submerged mixers, solid bowl type centrifuge for sludge dewatering unit , agitator laboratory equipment etc complete suitable for 90 MLD Treatment Plant etc complete and as directed by Engineer					
2.34.1	Motorised 1300 mm dia DI Butterfly valves at inlet	1 No				
2.34.2	Motorised 800 mm DI Butterfly valves at Flash Mixer to Floculator	2 Nos				
2.34.3	Motorised 400 mm DI Butterfly valves at Filter out let	12 Nos				
2.34.4	Motorised 400 mm DI Butterfly valves at Flow Restrictor valve	12 Nos				
2.34.5	Motorised 500 mm DI Butterfly valves at Wash water inlet	12 Nos				
2.34.6	200 mm sluice valve for Drain valve for manual operation	12 Nos				
2.34.7	Motorised 250 mm DI Butterfly valves at scour Air inlet	12 Nos				

Item	Description	Quantity	Unit Price ^a		Total EXW Price ^a	GST & Other Taxes
			Local Currency	EXW Price	Local Currency	Local Currency
1	2	3	4	5	6=3x5	7
2.34.8	400 mm Globe valve for Air Purge line	12 Nos				
2.34.9	Motorised 500 mm DI Sluice valves at Wash water line from OHT	2 Nos				
2.34.10	Motorised 250 mm DI Butterfly valves at Air Line from Air Blower	6 Nos				
2.34.11	Motorised 300 mm DI Butterfly valves at Back wash Pump	2 Nos				
2.34.12	300 mm DI Isolation valve at Back wash Pump	2 Nos				
	Motorised Gates					
2.34.13	400 mm x 400 mm at Filter inlet	12 Nos				
2.34.14	600mm x 600 mm at Flash Mixer	2 Nos				
2.34.15	600 mm x 600 mm at Floculator	4 Nos				

Item	Description	Quantity	Unit Price ^a		Total EXW Price ^a	GST & Other Taxes
			Local Currency	EXW Price	Local Currency	Local Currency
1	2	3	4	5	6=3x5	7
2.34.16	800 mm x 800 mm at Wash water outlet	6 Nos				
	Chlorine Dosing Pipelines					
2.34.17	PP Ball Valves - 400 mm dia at Line for Alum/PAC Dosing	6 Nos				
2.34.18	PP Ball Valves - 400 mm dia at Line for Poly Electrolyte Dosing	6 Nos				
2.34.19	PP Ball Valves - 400 mm dia at Line for Dewatering Poly	2 Nos				
2.34.20	PP Ball Valves - 400 mm dia at Line for Line for coagulating Poly in Waste recovery system	4 Nos				
	Pipes					
2.34.21	900 mm dia MS pipes -for Flash Mixer to Floculator	20 m				
2.34.22	900 mm dia MS pipes -for Flash Mixer to Floculator	30 m				

Item	Description	Quantity	Unit Price ^a		Total EXW Price ^a	GST & Other Taxes
			Local Currency	EXW Price	Local Currency	Local Currency
1	2	3	4	5	6=3x5	7
2.34.23	400 mm DI K9 pipe for Filtered water outlet	64 m				
2.34.24	200 mm DI K9 pipe for Air inlet	200 m				
2.35	Major Equipment in Water Treatment Plant Supply and Delivery of Major Equipment suitable for WTP components					
2.35.1	Slow speed Motor with Pedal arrangement for Flash Mixer	2 Set				
2.35.2	Flocculation and sludge scarping arrangement for Plate Settler and Flocculation/Clarifier Units	4 Set				
2.35.3	Filter Back wash pumps with required capacity	2 Nos				
2.35.4	Twin Lobe type Air Blowers for filter backwash with required capacity	2 Nos				
2.35.5	Monorail Hoist	2 Nos				

Item	Description	Quantity	Unit Price ^a		Total EXW Price ^a	GST & Other Taxes
			Local Currency	EXW Price	Local Currency	Local Currency
1	2	3	4	5	6=3x5	7
2.35.6	Filter Media (Sand & Gravel)	2610.14 Tonne				
	Chlorination System					
2.35.7	Vaccum Type Chlorinator for pre Chlorination Capacity 12 kg/hour each complete with motive water pumps and all other accessories	1 set				
	Vaccum Type Chlorinator for post Chlorination Capacity 12 kg/hour each complete with motive water pumps and all other accessories -2 Nos					
	Chlorine room safety kit- 5 Set					
	Emergency tonner leakage control Kit - 1 No					
	Exhaust Equipmet - 1 set					
	Scrubbing system with working and stand by suction fan, absorption tower, scrubbing media tank, working and standby scrubbing media circulation pumps etc- 1 Set					
2.36.8	EOT- 2 TONNE	2 Nos				

Item	Description	Quantity	Unit Price ^a		Total EXW Price ^a	GST & Other Taxes
			Local Currency	EXW Price	Local Currency	Local Currency
1	2	3	4	5	6=3x5	7
	Dirty Back wash Holding Tank					
2.36.9	Submerged Mixers	2 Nos				
2.36.10	Motor Submersible type pumps of 430 cu. m/hour capacity at 15 m head	3 Nos				
2.36.11	Mixers for coagulation polyelectrolyte solution preparation tank	2 Nos				
2.36.12	Coagulation Polyelectrolyte dosing (metering) Pumps	2 Nos				
	Thickner					
2.36.13	Equipment for mixing, flocculation coagulation, sludge scrapping and clarification	3 Set				
	Thickned sludge Tank					
2.36.14	Rotating Screw type positive displacement pumps for transferring sludge to dewatering units Capacity 25 Cu. M /hour at 30 m head with stand by	1 set				

Item	Description	Quantity	Unit Price ^a		Total EXW Price ^a	GST & Other Taxes
			Local Currency	EXW Price	Local Currency	Local Currency
1	2	3	4	5	6=3x5	7
2.36.15	Chain Pulle Block for Sludge Transfer Pumps	1 No				
	Centrifuge , Sludge Dewatering					
2.36.16	Solid Bowl Type Centrifuge Capacity 25Cu.M /hour slurry basis and 20 Ton dry solids per daywith standby	1 set				
	Dewatering Poly Solution Preparation & Dosing					
2.36.17	Agitator for solution preparation Tank	2 Nos				
2.36.18	Polyelectrolyte dosing (metering) Pumps rang 0.25lit/min to 2.5 lit /min	2 Nos				
2.36.19	Polyelectrolyte Solution Tanks (2000 Lit Capacity)	2 Nos				
	Coagulating Polyelectrolyte Solution Preparation and Dosing					
2.36.20	Agitator for solution preparation Tank	2 Nos				

Item	Description	Quantity	Unit Price ^a		Total EXW Price ^a	GST & Other Taxes
			Local Currency	EXW Price	Local Currency	Local Currency
1	2	3	4	5	6=3x5	7
2.36.21	Polyelectrolyte dosing (metering) Pumps rang 0.25lit/min to 2.5 lit /min	2 Nos				
2.36.22	Polyelectrolyte Solution Tanks (2000 Lit Capacity)	2 Nos				
	Alum/ PAC Dosing					
2.36.23	Agitator for solution preparation Tanks (replacement of Existing Mixers)	2 Nos				
2.36.24	Metering Pumps for ALUM/PAC dosing pump range2.5lit/min to 25 lit/min at 10 m head	2 Nos				
	Polyelectrolyte Dosing					
2.36.25	Agitator for solution preparation Tanks (replacement of Existing Mixers)	2 Nos				
2.36.26	Metering Pumps for Polyelectrolyte dosing dosing range 0.25 lit/min to 2.5 lit/min	2 Nos				
2.36.27	Poly solution tanks 10000 lit cap.	2 Nos				
2.36.28	Laboratory Equipment	1 Set				

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Item	Description	Quantity	Unit Price ^a		Total EXW Price ^a	GST & Other Taxes
			Local Currency	EXW Price	Local Currency	Local Currency
1	2	3	4	5	6=3x5	7
2.36.29	Supply and delivery of any other Equipment required to complete this project other than specified above. The contractor has to submit the list of such equipment along with cost of each equipment	1 set				
TOTAL Column 6 and column7 to be carried forward to Schedule No. 5: Grand Summary						

Name of Bidder _____

Signature of Bidder _____

a. Specify currency in accordance with ITB 15.1 of the BDS.

b. Column 5, EXW Price shall include all customs duties and sales and other taxes already paid or payable on the components and raw materials used in the manufacture or assembly of the item or the customs duties and sales and other taxes already paid on previously imported items.

Note:

1. For a particular item, the bidder shall quote rate either in Schedule No 1 or Schedule No 2. If the bidder quotes rates for a item in both these Schedules then minimum rate mentioned in the Schedule No 1 or Schedule No 2 shall be considered for evaluation.
2. The Rates shall include all shipment, freight, loading and unloading charges up to the site.

PRICE PROPOSALS - PART A: DESIGN-BUILD COMPONENTS

Name of Project	Bihar Urban Development Investment Program – Tranche 2 (ADB Loan: Applied for / Project No. IND-41603-023)
Name of Employer:	Bihar Urban Infrastructure Development Corporation Limited (BUIDCo)
Contract Title:	Improvement of Water Supply System in Bhagalpur Municipal Corporation (BWSP 02)
Contract Package No:	BH/WS/02
Bidder's Name :	
Schedule No. 03: DESIGN SERVICES	

SNo	Description	Quantity	Unit Price ^a		Total Price ^a	
			Local Currency Portion	Foreign Currency Portion	Local Currency Portion	Foreign Currency Portion
1	2	3	4	5	6=3 x 4	7 = 3 x 5
	Design of following components including topographical survey, Soil bearing capacity test at the required places, testing of water samples, any other survey required for designing the components including Architectural design, Hydraulic design and Structural design of all the components including preparation of ready built drawings for all the components and final as build drawings etc complete.					
3.1	Design of Approach Channel for 141 MLD capacity of water to enter in the Intake well. The bank protection works, Ghat development shall be included in the design.	1				

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Improvement of Water Supply System in Bhagalpur Municipal Corporation (BH/WS/02)

SNo	Description	Quantity	Unit Price ^a		Total Price ^a	
			Local Currency Portion	Foreign Currency Portion	Local Currency Portion	Foreign Currency Portion
1	2	3	4	5	6=3 x 4	7 = 3 x 5
3.2	Design of Intake well for the capacity of 141 MLD near Vikram shila Bridge	1				
3.3	Design of connecting pipe for connecting Intake well and Jack well for a capacity of 141 MLD of water to be entered in to the Jack well from intake well	1				
3.4	Design of Jack well cum pump house to hold 141 MLD of water and to erect Turbine pumpsets suitable for 141 MLD capacity of water with 50% standby pumpsets. Development of Jack well site, road works, shall be included in the design	1				
3.5	Design of Water Treatment Plant of capacity 135 MLD in two modules (90 MLD and 45 MLD), with all the components required including sludge management plan and Pipe connections and its electro mechanical items to treat the raw water to meet the drinking water standards specified by the CPHEEO standards. The land development, staff quarters, security cabin, upgradation of existing sedimentation Tanks Transformer yard and control room for intake and at Barari water works shall be included in the design (The design includes survey works, soil bearing capacity test for all the components, hydraulic design, Architectural design and structural design of all the components)	1				

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Improvement of Water Supply System in Bhagalpur Municipal Corporation (BH/WS/02)

SNo	Description	Quantity	Unit Price ^a		Total Price ^a	
			Local Currency Portion	Foreign Currency Portion	Local Currency Portion	Foreign Currency Portion
1	2	3	4	5	6=3 x 4	7 = 3 x 5
	Design of Electrical and Electro Mechanical Equipments and pipe connections required for this project	1				
3.6	Design of SCADA system and Equipments to remote control the entire water supply system including the Treatment plant, intake well, Jack well cum pump house, raw water main, clear water mains and all the components proposed under this package	1				
TOTAL. Column 6 and column7 to be carried forward to Schedule No. 5: Grand Summary						

Name of Bidder _____

Signature of Bidder _____

a Specify currency in accordance with ITB 15.1 of the BDS.

PRICE PROPOSALS - PART A: DESIGN-BUILD COMPONENTS

Name of Project	Bihar Urban Development Investment Program – Tranche 2 (ADB Loan: Applied for / Project No. IND-41603-023)
Name of Employer:	Bihar Urban Infrastructure Development Corporation Limited (BUIDCo)
Contract Title:	Improvement of Water Supply System in Bhagalpur Municipal Corporation (BWSP 02)
Contract Package No:	BH/WS/02
Bidder's Name :	
Schedule No. 04: INSTALLATION AND OTHER SERVICES	

Item	Description	Quantity	Unit Price ^a		Total Price ^a	
			Local Currency Portion	Foreign Currency Portion	Local Currency Portion	Local Currency
1	2	3	4	5	6=3x4	7=3x5
4.1	<p>Approach Channel in River Ganga to feed 141 MLD of water to Intake well</p> <p>Formation of Approach channel for diverting 141 MLD of water into the intake well to be constructed in the Bank of River Ganga and Forming of approach channel in the River Ganga to entry of 141 MLD of water into the intake well even during dry season and maintain the channel throughout the project period as per the employer requirement and as specified in the technical specification by engaging the Dredging unit including cost of all surveys required for dredging, hire charges of dredging unit, boats and other accessories including cost of all labour and fuel for the machineries and bailing out of water. The dredged sand shall be disposed off 8 km away from the site and as directed by the Engineer. The contractor shall provide sufficient number of pinger instrument (noise emitting device to keep the Dolphins away from the dredged area during dredging. The</p>	1 No				

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[Improvement of Water Supply System in Bhagalpur Municipal Corporation \(BH/WS/02\)](#)

Item	Description	Quantity	Unit Price ^a		Total Price ^a	
			Local Currency Portion	Foreign Currency Portion	Local Currency Portion	Local Currency
1	2	3	4	5	6=3x4	7=3x5
4.2	<p>contractor shall also employ one nodal Environment Expert for protection Environment health and safety of aquatic life and for workers. He shall also observe the monitoring and mitigation as per IEE and IMP reports</p> <p>Bank Protection works</p> <p>Construction of Bank Protection work in the form of piling and revetment for 15m length on either side of the intake well including earth work excavation in the needed area and construction of embankment with borrow pits and laying of biaxial P.V.C knitted coated polyster subgrade as a separator cum reinforcing agent including filling of sand wherever required and laying pitching on the slopes with cement concrete grade M30 and Construction of Ghat for a length of 110 m with reinforced cement concrete of grade M 30 including providing & installation of SS304 railing with chains, sheet piles at toe beam and including cost of reinforcement etc complete and as directed by the Engineer as directed by the Engineer</p>	1 Job				
4.3	<p>141 MLD capacity Intake well near Vickram shela Bridge</p> <p>Construction of RCC intake well by Sinking of Well capable of receiving raw water 141 MLD on the bank of the River Ganga by Caisson method or any other suitable method up to the required depth below the scour depth with required size and shape and providing the required number of openings at two or more levels with screen for entry of water alone without any silt and fish etc even during summer and winter and necessary sluice gate arrangement to be provided to close the openings whenever not required. The sluice gate shall be operated manually and as well as by electric motors, inside access ladder from the top of intake to bottom</p>	1 No				

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Improvement of Water Supply System in Bhagalpur Municipal Corporation (BH/WS/02)

Item	Description	Quantity	Unit Price ^a		Total Price ^a	
			Local Currency Portion	Foreign Currency Portion	Local Currency Portion	Local Currency
1	2	3	4	5	6=3x4	7=3x5
4.4	<p>floor level for inspection. The cost shall include the cost of survey and soil investigation for confirming the location of intake well and cutting edge and boring with 100 mm dia casing pipe for anchor bars including cost of anchor bars required, hire charges of cranes and form work required for construction etc complete and as directed by Engineer.</p> <p>Connecting pipe between Intake well and Jack well for 141 MLD of water</p> <p>Providing, laying and fabricating and testing of MS pipe/ of required diameter to convey the ultimate requirement of Raw water of 141 MLD from intake well to jack well by gravity, by trenchless method adopting any suitable technology about 13 m below the ground at required depth as per the direction of competent authority including carrying out survey work at the job site for determining underground cable trenches like telephone, power cable, water & sanitary lines and resistivity tests for finding the soil strata using necessary equipment for completion of work, mobilizing of machineries and specialized crew at the job site, etc. complete in all respects, including excavation of drive pit and exit pit (up to required depth), necessary de-watering and providing concrete foundations at the base of the Drive pit, crane for handling of pipes, and any other machinery, tool & tackles required, construction of temporary works as per requirement and as approved by IWAI authorities complete in all respect with all lead and lifts, as per specification and the direction of the Engineer. In all type of soils and Extra for excavation of driven pit/ exit pit / intermediate pit beyond 3 metre depth, required for pushing/ pulling of MS pipe in trenchless technology, with proper protection at three sides with shoring sheets</p>	1 No				

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			Local Currency Portion	Foreign Currency Portion	Local Currency Portion	Local Currency
1	2	3	4	5	6=3x4	7=3x5
	and ISMB's, maintaining during pushing/ puling of pipe, back filling, necessary de-watering including all machinery, tools, and tackles required, including welding, lining of pipes, etc complete as per specification and the direction of the Engineer					
4.5	<p>141 MLD capacity Jack well</p> <p>Construction of RCC Jack well with required shape and size to hold the water of 141 MLD and to accommodate the pumps for operation by well sinking method or any other suitable method up to the depth below the scour depth and 2 to 3 m below the invert level of the connecting pipe. The pump house shall be on the floor slab level of the well above the maximum flood level to house the required number of pumps for intermediate and ultimate stage requirement. The cost include the cost of survey and soil investigation and cost of boring with casing pipe for anchor bars and the cost of cranes, dewatering charges, fuel charges and other machinery and manpower required for well sinking including safety arrangement for under water works and disposing the surplus earth, bricks, bats etc from site and disposing 8 km away from the site etc. The pump house shall be equipped with sufficient ventilation and entry arrangements for the bringing the heavy duty pumpsets including proper electrification. Necessary Gantry girders and Electrically operated trolley shall be provided to lift the pumps for erection and operation and maintenance and including providing of suitable surge protection device near the pump house for the Raw water main, internal roads, including the electrification, water supply and sanitary arrangements etc complete and as per the direction of Engineer.</p>	1 No				

Item	Description	Quantity	Unit Price ^a		Total Price ^a	
			Local Currency Portion	Foreign Currency Portion	Local Currency Portion	Local Currency
1	2	3	4	5	6=3x4	7=3x5
4.6	90 MLD capacity Water Treatment Plant at Barari Waterworks					
4.6.1	Up gradation of Existing Sedimentation Tanks					
4.6.1.1	Up gradation of four sedimentation tanks by removing the central walls connecting the four tanks and convert it into two tanks for improving the performance of the tanks including cleaning of sludge and silt accumulated in the tanks and disposal of surplus earth, bricks, bats etc 8 km away from the site, providing laying and jointing of inlet and outlet M.S pipes and DI K9 pipes of suitable size to carry 141 MLD water with baffle arrangement on inlet and out let side with necessary valve arrangements on both sides and repair to the existing masonry embankment by cement mortar including testing and commissioning the sedimentation tank after up gradation etc complete and the work shall be carried out in lean season when the turbidity is low and without affecting the existing water supply and as directed by Engineer.	1 No				
4.6.1.2	RCC Settled water sump of capacity 1200 cum and settled water pump house of size 20 x 7.50 m	1 No				
4.6.2	Construction of water Treatment Plant with the following components suitable producing 90 MLD of potable water as per CPHEEO standards at Intermediate stage and Provision for 45 MLD plant for future expansion including topographical survey of site, soil investigation for ascertaining soil bearing capacity, Equipment required for all the components of WTP, electrification , lighting, sanitation and disposal arrangement for sludge etc including testing and commissioning of the water treatment plant etc complete and as directed by the Engineer. The layout of the existing and proposed WTP shall be accommodated in the available land at Barari water works					

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			Local Currency Portion	Foreign Currency Portion	Local Currency Portion	Local Currency
			4	5	6=3x4	7=3x5
1	2	3	4	5	6=3x4	7=3x5
4.6.2.1	Units for 90 MLD capacity WTP					
4.6.2.2	Inlet chamber, Parshall Flume and Flash Mixer 2 Nos	1 LS				
4.6.2.3	Flocculator - 4 Nos	1 LS				
4.6.2.4	Plate Settler- 2 Nos	1 LS				
4.6.2.5	Filtration units with Filter Beds 12 Nos including Bye pass arrangements	1 LS				
4.6.2.6	Back wash Tank	1 LS				
4.6.2.7	Back wash Pipe line	1 LS				
4.6.2.8	Chlorine Contact Tank- 2 Nos	1 LS				
4.6.2.9	Chemical Building	1 LS				
4.6.2.10	Chlorine Building - 2 Nos	1 LS				
4.6.2.11	Administrative Building and Laboratory double storied building with each floor having a plinth area of 250 sq.m including electrification, sanitation and water supply arrangements	1 LS				
4.6.2.12	Clear water Reservoir of required capacity to supply 135 MLD potable water (with minimum of 2 hour storage capacity,) ultrasonic level sensors, water level indicators, ladder, inlet and over flow DI pipes of suitable diameter	1 LS				
4.6.2.13	Clear Water Pump House to accommodate Intermediate vertical Turbine pumps and future provision for accommodating ultimate stage pumps including electrification, sanitation and water supply arrangements	1 LS				
	Sludge Treatment					
4.6.2.14	Sludge Balancing Tank	1 LS				
4.6.2.15	Sludge gravity Thickener -3 Nos	1 LS				
4.6.2.16	Thicken sludge sump	1 LS				
4.6.2.17	Supernatant sump	1 LS				
4.6.2.18	Centrifuge Building /Sludge dewatering unit	1 LS				

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			Local Currency Portion	Foreign Currency Portion	Local Currency Portion	Local Currency
1	2	3	4	5	6=3x4	7=3x5
4.6.3	Bank Protection works					
4.6.3.1	River Bank Protection works at WTP area on the right bank of River Ganga by revetment and piling for a length of about 500 m including surveying ,construction etc complete	1 LS				
4.6.4	Miscellaneous					
4.6.4.1	Construction of security cabin including electrification, sanitation and water supply arrangements	1 LS				
4.6.4.2	Construction of 4 staff quarters of 50 sqm plinth area to accommodate the pump operators, filter bed operators, watchmen, and other staffs and to be located in one three storied building with parking at basement including electrification, sanitation and water supply arrangements	1 LS				
4.6.4.3	Construction of Internal Bitumen Road of width 3.75 m for a length of 1 KM	1 LS				
4.6.5	Switch Yard at Head works and Barari water Works					
4.6.5.1	Construction of Control room of size 20 x 10 m for housing the HT and LT meters and Transformer yard for housing the transformer including providing fencing and gates etc complete at Barari water works and Head works- 2 Nos	1 No				
4.7	Electrical and Electro Mechanical Equipements for all the componets under this project					
4.7.1	Installation, testing and commissioning of the Raw water pumps including all machineries and connecting pipes and specials etc for Raw water Pumping station.					
4.7.1.1	Vertical Turbine pumpset 1027 m3/hr, at an approximate head of 29m (the head shall be designed as per actual site condition, 980 rpm as per specifications.(4W + 2S), and Vertical Solid Shaft Motor suitable for the above pump 980 RPM ,including Soft starter suitable for the above motor. and pipe connections	6 set				

Item	Description	Quantity	Unit Price ^a		Total Price ^a	
			Local Currency Portion	Foreign Currency Portion	Local Currency Portion	Local Currency
1	2	3	4	5	6=3x4	7=3x5
4.7.1.2	Installation, lowering, laying, aligning, fixing in position in pipe line, power actuated and manually operated DI D/F Sluice valves of reputed make (IS:14846 amended up to date) PN 1.0 class of following dia complete (including jointing material) including DI Dismantling joints all material, labour, testing and commissioning as per Technical Specifications and as per direction of Engineer.					
4.7.1.2.1	500 mm Sluice valve	6 No				
4.7.1.2.2	900 mm Sluice valve	1 No				
4.7.1.3	Installation, lowering, laying, aligning, fixing in position and jointing in pipe line, DI dual plate check valves as per API:594 and API:598 of PN 1.0 rating of following dia (including jointing material), including all material, labour, testing and commissioning as per Technical Specifications and as per direction of Engineer. NRV 500mm	6 No				
4.7.1.4	Installation, lowering, laying, aligning, fixing in position D.I. D/F electrically actuated long body butterfly valves (IS: 13095) PN-1.0 class of following dia complete (including jointing material) including DI Dismantling joints, all material, labour, testing along with pipe line and commissioning as per Technical Specifications and as per direction of Engineer. Butterfly Valves 500mm	6 No				
4.7.1.5	Installation, testing and commissioning of glycerin filled Pressure gauge of following ranges - 0 t 0 6.0kg/cm ² with isolation valve and tap off pipe complete in all respect as per technical specification and as per direction of Engineer. 150mm Diameter	6 No				
4.7.1.6	Installation, testing and commissioning of Electromagnetic Flow Meter etc. including Dismantling	2 No				

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Item	Description	Quantity	Unit Price ^a		Total Price ^a	
			Local Currency Portion	Foreign Currency Portion	Local Currency Portion	Local Currency
1	2	3	4	5	6=3x4	7=3x5
4.7.1.7	<p>joints, all materials, DI fittings and making connection with pipeline required for Electromagnetic Flow Meter including cutting the pipe line etc. complete in all respect as per technical specification and as per direction of Engineer.600 mm</p> <p>Installation, testing & commissioning of Electrically Operated Travelling Crane (EOT) .Main girder & End Carriage fabricated from Rolled Steel Section, Gear Box for all motion, Electro Magnetic Friction Disc Type Brakes, all safety limit switches, LT wheels EN 9, Double Flanged 4No, with Sq. Cage motor of adequate rating (kW), duly painted mechanical cleaning and one coat of primer and two coat of synthetic paint and as per the direction of the Engineer.</p> <p>EOT Crane with sufficient capacity to lift the raw water pumpsets with 9 m span and required lift.</p>	2 No				
4.7.1.8	<p>Installation, testing and commissioning of Non clog submersible pumping set of 2% Ni Cl Cascading, Impeller CF 8M, Shaft SS 410, mechanical seal with 10M Power & Control cable , 5M Galvanized Chain, 10M, 50mm MS galvanized Guide pipe, Duck Foot Bend, with Guide wire SS 304 etc. complete with all respect as per specification - Discharge 160 cum/hr and head 8 to 10 M</p> <p>15 HP Drainage submersible pump for removal of silt in the intake sump.</p>	2 No				
4.7.1.9	<p>Installation, testing and commissioning of Air Compressor and accessories required for cleaning of Conveyance pipe. The capacity of the compressor shall be adequate to clean the deposited silt in the connecting pipe.</p>	1 No				
4.7.1.9.1	S S Air line for Air compressor 50mm	327.6 kg				

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			Local Currency Portion	Foreign Currency Portion	Local Currency Portion	Local Currency
1	2	3	4	5	6=3x4	7=3x5
4.7.1.9.2	Perforated air pipe for compressed air 50 mm dia	302.4 m				
4.7.1.10	Installation, laying, aligning, fixing in position and jointing in pipe line, DI screwed Air valves class PN-1.0 single ball of approved make, including screw down isolation valve of following dia including cost of all labour, jointing material i.e. bolts, nuts, rubber insertions etc. complete including all material, labour, testing and commissioning as per Technical Specifications and as per direction of Engineer.	2 No				
4.7.1.11	50 mm screwed ends Installation, aligning, testing and commissioning of anti-vibration pads for foundation of motors	6 No				
4.7.1.12	Installation, aligning and fixing clamps on column pipe with rubber bush to control the vibration of bowl assembly and testing and commissioning etc complete	6 No				
4.7.2	Electrical Substation and system at Intake works					
4.7.2.1	Installation, laying underground cable IS:7098 Part-II as per SBPDC specifications and of approved make suitable for working voltage up to and including 33 kV in aluminium conductors XLPE armoured category-I including excavation of 30cm x 150cm size trench as per IS:1255, 24cm thick under layer, refill earth in the remaining portion, making necessary connections including testing etc. as required of size given below and providing & making heat shrinkable type indoor/outdoor/straight through terminations for 33kV XLPE cables with required components. Preparation of cable ends, testing and commissioning etc. as required					
4.7.2.2	Installation, Laying and jointing of 33kV Cable Tapping line from WTP to Raw Water Intake substation to be laid by the Contractor - 33kV 3Core 300Sq.mm cable.	2500 m				

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			Local Currency Portion	Foreign Currency Portion	Local Currency Portion	Local Currency
1	2	3	4	5	6=3x4	7=3x5
4.7.3	Installation , testing and commissioning of the following equipment					
4.7.3.1	33 KV /0.433 KV substation at Raw Water Intake works					
4.7.3.1.1	36 KV VCB Panel- Installation, testing & commissioning of 800 A, 36 KV indoor type, triple pole metal clad truck mounted horizontal draw out type circuit breaker enclosed in cubicle made of CRCA sheet steel of minimum 3 mm thickness, comply with IS-13118, IEC-56 and confirming to M-2 class. The cubicle panel shall be vermin proof and dust-tight and shall be of folded type construction. The switchgear and control gears complete with all necessary supporting framework, nuts and bolts etc for securing the same to the floor conforming to IEC62271/100-200 with ingress protection as IP-5X. The Indoor panel switch gear (circuit breakers -3 Nos, CTs, - 6 NosPTs-3 Nos etc) and control gear (relays, meters etc) shall be mounted on the same panel excluding civil works with principal parameters as under: No. of Poles - 3	1 Set				
	Rated Voltage - 36 KV Rated Insulation Level Lightning Impulse voltage - 170 kV(Peak) One minute Power Frequency withstand voltage - 70 kV(rms) Frequency - 50 Hz Rated normal current - 800 A Short circuit breaking capacity - 25 kA Short circuit withstand current - 25 kA for 3 secs					
	Max. operating time - less than 3 cycles Minimum operations at full rated short circuit breaking					

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			Local Currency Portion	Foreign Currency Portion	Local Currency Portion	Local Currency
1	2	3	4	5	6=3x4	7=3x5
	<p>currents - 100 Rated Breaking capacity Symmetrical - 25 kA Asymmetrical - As per relevant standards Rated making capacity - 2.5x25 kA Operating mechanism - motor operated spring charged closing mechanism Heater/lamp/socket - 240V Control voltage - 110 VDC Vacuum Circuit Breakers with three interrupters mounted on same carriage having fixed & moving contacts in sealed envelope with vacuum below 10⁻⁶ torr. Complete as per technical specifications and/or as directed by Engineer.</p>					
	<p>The VCB shall include specified cubicle panel, Aluminium / Copper bus bars, Insulator, sleeves, PT, CT etc complete in all respect. Installation, testing & commissioning of 33kV Control & Relay Panel duly mounted with protective relays, metering equipment etc. required for the satisfactory operation of 33kV side of 33/0.4kV Power Transformers. The C/R cubicles of folded type construction with front base frame and door frame fabricated from CRCA sheet steel 10 SWG (3mm) thickness, while the side, roof & doors fabricated out of 14 SWG (2mm) thick CRCA sheet steel. The height of panel inclusive of base channel height of 102 mm of not more than 2312 mm, width of 750 mm or suitable to accommodate equipments and panel of depth 610 mm with dust & vermin proof and suitable for tropical use. The complete panel incorporates all necessary meters, instruments relays, control switches, indicating lamps, mimic buses, audible & visual alarms. The enclosure provide minimum degree of protection equivalent to IP-51 as per IS 2147.</p>	1 Set				

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			Local Currency Portion	Foreign Currency Portion	Local Currency Portion	Local Currency
1	2	3	4	5	6=3x4	7=3x5
4.7.3.1.2	<p>The relays offered conforming to latest issue of IS: 3231 & IS-8686. For over current & earth fault numerical relays be provided. In three phase protection relay, the setting for over current element be 50-200% (in steps of 10%)</p> <p>and for earth fault element from 10 to 80% (in steps of 10%). Relay should also have features of self diagnosis, minimum last five abnormal events recording over current & earth fault including fault level & phase along with date & time, on line display of current and communicable with open protocol having RS-485 port. The panel be equipped with Annunciation scheme for indicating all annunciations equipped for the trip & non trip alarms. All indicating instruments of Switch Board type back connected suitable for flush mounting and provided with dust & vermin proof case for tropical use. All indicating instruments conforming to latest edition of IS-2419/1963. complete as per technical specifications and /or as directed by engineer.</p> <p>33 kV Relay Panel</p> <p>Installation, fixing in position of required no. of lightening arrester set complete with 600mm x 600mm x 6mm thick G.I. earthing plate embedded below ground in earthing pit at 3.5 metre depth, G.I. strip of size 25mmx5mm thick from earthing plate to top of Over head tank, G.I. Finial made of GI bar 25mm dia and 2m long fixed on top of OH tank and connected to GI strip. The earthing set shall comply of IS:3043 complete in all respect as per specification and testing and commissioning as per the direction of the Engineer.</p> <p>Lightning Impulse voltage - 170 kV(Peak)</p>	1 Set				

Item	Description	Quantity	Unit Price ^a		Total Price ^a	
			Local Currency Portion	Foreign Currency Portion	Local Currency Portion	Local Currency
1	2	3	4	5	6=3x4	7=3x5
4.7.3.1.3	Installation, Testing & Commissioning of HT metering cubical panel as approved By DISCOMs fabricated out of 14 SWG CRCA sheet steel in two compartment & MS angle of size 60mmX6mm having provision for Following:	1 Set				
4.7.3.1.4	(i) Provision for fixing Trivector Meter (To be supplied by DISCOMs) (ii) Provision for fixing of combined CT PT Set (To be supplied by DISCOMs) (iii) TT Block (iv) 6mm Bakelite sheet on all sides. Installation, testing and commissioning of Earthing of all substation equipment as per IS:3043 as per IEEE Standard 80-2000 (IEEE Guide for safety in AC Substation Grounding)	5 Set				
4.7.3.1.5	Installation, testing and commissioning of SF Rubber matting with one side corrugated as per IS specification 15652/2006 - 11 kV, 25 mm thick	12 Sq.m				
4.7.4	Transformer	2 Set				
4.7.4.1	Installing in correct aligned position, effecting proper connections, testing and commissioning of following rating out door type oil filled off circuit tap changer transformer with the following specification and confirming to IS 1180(Part 1 -2014) Thickness of transformer Tank (rolling tolerance as per IS) No Load Voltage ratio : 33/0.433 kV No. of phases / frequency : 3 Phases/ 50 Hz Type : Core type, double copper wound Cooling : ONAN Vector Group : DYN11					

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1	2	3	4	5	6=3x4	7=3x5
	Temperature rise (OIL/WINDING) : 40/50 deg C Off circuit Taps on HV side in the steps of 2.5%,+5 % to -10%					
	Termination (HV) : Air filled cable end box suitable for 33 kV of adequate cable size Termination (LV) : Air filled cable end box suitable for 1.1 kV of adequate cable size The transformer shall be supplied with following fittings: (i)Bochholz Relay (ii)Conservator with drain valve (iii)Magnetic Level Indicator (iv)Silica gel breather with oil seal (v) First filling of filtered oil as per IS : 335 including make up fill during installation of transformer plus 10% extra oil					
	(vi) off circuit switch (vii) Lifting lugs (viii) Earthing terminal- 2 nos. (ix) Thermometer pocket (x) Air release plug (xi) Inspection cover (xii) Top filter valve - 1no. (xiii) Radiator with top & bottom shut off valves					
	(xiv) 100 mm dial magnetic oil level guage with max. pointer & with alarm contacts (xv) Rating & Diagram plate (xvi) Bi-directional Plain/ Flanged Rollers (xvii) 150 mm dial Winding temperature indicator with max pointer and alarm & trip contacts (xviii) 150 mm dial Oil temperature indicator with max					

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			Local Currency Portion	Foreign Currency Portion	Local Currency Portion	Local Currency
1	2	3	4	5	6=3x4	7=3x5
	pointer and alarm & trip contacts (xix) Disconnecting facility of HV Cable box Transformers described as above and as per the following continuous rating 1250kVA Transformer (1250KVA capacity of transformer is minimum, however if the design indicates a higher capacity shall be considered).					
4.7.4.2	Automatic Power factor Improvement Panel to improve the power factor up to 0.95 lagging. This will include panel cubical, Microprocessor based intelligent power factor correction relay complete in all respect.	1 Set				
4.7.4.3	Installation, testing and commissioning of Rubber matting with one side corrugated as per IS specification 15652/2006 - 11 kV, 25 mm thick	15 Sq.m				
4.7.5	LT Panel RWPS					
4.7.5.1	Installation, testing and commissioning of wall/free standing floor mounted dust and vermin proof compartmentalized cubical panel for 0.415kV including the suitable size of electrolytic grade Copper Bus Bars, insulators etc., for the following feeders: 1. 2 Nos. Incoming ACB from the transformer- This will be provided with (but not limited to) Digital Multifunction meter compatible to SCADA, metering, Protection CT's, IDMT 3O/C&1 E/F, indicating lamps, control fuse , wiring etc. complete in all respect 2. 1No. ACB for Bus Coupler. This will be provided with (but not limited to) without release Protection CT's, IDMT 3 O/C & 1 E/F, Indicating Lamps, Control Fuses and wiring etc. complete in all respect. 3. MCCB panels for APFC Panel, Pumping plant, Above panels shall be provided with- (but not limited to) metering CTs, multi function meter compatible to	1 Set				

Item	Description	Quantity	Unit Price ^a		Total Price ^a	
			Local Currency Portion	Foreign Currency Portion	Local Currency Portion	Local Currency
1	2	3	4	5	6=3x4	7=3x5
	SCADA, Ampermeter with SS, Voltmeter with SS, Indicating Lamps, Control Fuse, wiring etc. complete in all respect. (Minimum No.8)					
4.7.5.2	4.MCCB panels for auxiliary and spare (Minimum No.6) Above panels shall be provided with- (but not limited to) metering CTs, multi function meter compatible to SCADA, Ampermeter with SS, Voltmeter with SS, Indicating Lamps, Control Fuse, wiring etc. complete in all respect. (Minimum No.8) MCCB shall be provided with shunt release, Under voltage release and Earth fault module. Installation, testing and commissioning of Bus Trunking arrangement in convenient sections complete with housing of galvanized sheet steel of minimum 1.5mm thickness, Copper bus bar for use of 3phase-4Wire 415Volt A.C supply with degree of protection ip-42 for the minimum 2000A rating including jointing of Section, flexible joints, expansion joints and earthing with 2 runs of aluminum strips,etc. From Transformer LT to incoming of LT Panel.	1 Lot				
4.7.5.3	Installation, Laying and jointing, testing and commissioning of XLPE insulated sheathed cable of 1.1 kV grade with aluminium conductor Armoured of IS:7098-1/1554-1 approved make in ground as per IS:1255 including excavation of 30cmx75cm size trench, 25 cm thick under layer of sand, IInd class bricks covering, refilling earth, compaction of earth, making necessary connection, testing etc. as required of size for the pumping station.	1 Lot				
4.7.5.4	Installation, testing and commissioning of Battery Charger, battery bank of min 150 AH capacity comprising SMF/VRLA batteries, MS / Teakwood battery stand, interconnect wiring etc. as required complete in all	1 set				

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			Local Currency Portion	Foreign Currency Portion	Local Currency Portion	Local Currency
1	2	3	4	5	6=3x4	7=3x5
4.7.5.5	respect. Installation, testing and commissioning of Earthing of all equipment as per IS:3043. and requirement of IER.	1 Job				
4.7.6	Installation, erection, testing and commissioning of the settled water pumping station machineriessand connected pipes and specials etc for settled water sedimentation Pumping station.					
4.7.6.1	Vertical Turbine pumpset 1027 m3/hr, at an approximate head of 8m (the head shall be designed as per actual site condition, 980 rpm as per specifications.(4W + 2S) and Vertical Solid Shaft Motor suitable for the above pump 980 RPM including soft starter for the pumps, and MS pipe connections	6 set				
4.7.6.2	Installation, lowering, laying, aligning, fixing in position in pipe line, power actuated and manually operated DI D/F Sluice valves of reputed make (IS:14846 amended up to date) PN 1.0 class of following dia complete (including jointing material) including DI Dismantling joints all material, labour, testing and commissioning along with pipe line as per Technical Specifications and as per direction of Engineer. 450mm	6 No				
4.7.6.3	Installation, lowering, laying, aligning, fixing in position and jointing in pipe line, DI dual plate check valves as per API:594 and API:598 of PN 1.0 rating of following dia (including jointing and jointing material), including all material, labour, testing and commissioning as per Technical Specifications and as per direction of Engineer. NRV 450mm	6 No				

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			Local Currency Portion	Foreign Currency Portion	Local Currency Portion	Local Currency
1	2	3	4	5	6=3x4	7=3x5
4.7.6.4	Installation, lowering, laying, aligning, fixing in position DI D/F electrically actuated long body butterfly valves (IS: 13095) PN-1.0 class of following dia complete (including jointing material) including all material, DI Dismantling joints, labour, testing along with pipe line and commissioning as per Technical Specifications and as per direction of Engineer.					
4.7.6.4.1	450mm	6 No				
4.7.6.4.2	900mm	1 No				
4.7.6.5	Installation, testing and commissioning of glycerin filled Pressure gauge of following ranges with isolation valve and tap off pipe complete in all respect as per technical specification and as per direction of Engineer. Glycerine filled Pressure Gauge 0 to 6.0 kg/cm ² 150mm dia.	6 No				
4.7.6.6	Installation erecting, testing & commissioning of Electrically Operated Travelling Crane (EOT) .Main girder & End Carriage fabricated from Rolled Steel Section, Gear Box for all motion, Electro Magnetic Friction Disc Type Brakes, all safety limit switches, LT wheels EN 9, Double Flanged 4No, with Sq. Cage motor of adequate rating (kW), duly painted mechanical cleaning and one coat of primer and two coat of synthetic paint and as per the direction of the Engineer. EOT Crane with sufficient capacity to lift the settled water pumpsets with 9 m span and required lift	1 No				
4.7.6.6	Installation, testing and commissioning of wall/free standing floor mounted dust and vermin proof compartmentalized cubical panel for 0.415kV including the suitable installation, testing and commissioning of wall /free standing floor mounted dust and vermin proof	1 Set				

Item	Description	Quantity	Unit Price ^a		Total Price ^a	
			Local Currency Portion	Foreign Currency Portion	Local Currency Portion	Local Currency
1	2	3	4	5	6=3x4	7=3x5
	<p>compartmentalized cubical panel for 0.415kV including the suitable size of electrolytic grade Copper Bus Bars, insulators etc., for the following feeders:</p> <p>1. 1 No. Incoming MCCB -This shall be provided with- (but not limited to) metering CTs, multi function meter compatible to SCADA, Ampere meter with SS, Voltmeter with SS, Indicating Lamps, Control Fuse, wiring etc. complete in all respect.</p> <p>2. MCCB panels for Pumping plant Automatic Star Delta Starter 6 Nos.</p>					
	<p>Above panels shall be provided with- (but not limited to) metering CTs, multi function meter compatible to SCADA, Ampere meter with SS, Voltmeter with SS, Indicating Lamps, Control Fuse, wiring etc. complete in all respect. (Minimum No.8)</p> <p>3.MCCB panels for auxiliary and spare-</p> <p>Above panels shall be provided with- (but not limited to) metering CTs, multi function meter compatible to SCADA, Ampere meter with SS, Voltmeter with SS, Indicating Lamps, Control Fuse, wiring etc. complete in all respect. (Minimum No.3)</p>					
4.7.6.7	MCCB shall be provided with shunt release, Under voltage release and Earthfault module. Installation, testing and commissioning of Rubber matting with one side corrugated as per IS specification 15652/2006 - 11 kV, 25 mm thick for the Panel	1 set				
4.7.6.8	Installation, Laying, jointing, testing and commissioning of XLPE insulated sheathed cable of 1.1 kV grade with aluminium conductor Armoured of IS:7098-I/1554-1 approved make in ground as per IS:1255 including excavation of 30cmx75cm size trench, 25 cm thick under	1 Lot				

Item	Description	Quantity	Unit Price ^a		Total Price ^a	
			Local Currency Portion	Foreign Currency Portion	Local Currency Portion	Local Currency
1	2	3	4	5	6=3x4	7=3x5
4.7.6.9	layer of sand, 11nd class bricks covering, refilling earth, compaction of earth, making necessary connection, testing etc. of required size and length for the pumping stations. Installation, testing and commissioning of Earthing of all equipment as per IS:3043 and requirement of IER.	1 Set				
4.7.6.10	Installation, testing and commissioning of charged ABC type fire extinguisher including the cost of fixing with nut, bolts etc as required.5 KG	4 No				
4.7.7	Installation, erection, testing and commissioning of the Clear water pumping station machineries including connected pipes and specials etc complete at WTP					
4.7.7.1	Vertical Turbine pumpset 978 m3/hr, at an approximate head of 38m (the head shall be designed as per actual site condition, 980 rpm as per specifications. (5W + 2S) and Vertical solid shaft Motor suitable for the pumps including the soft starter suitable for the motor of the pump and connecting pipes	7 set				
4.7.7.2	Installation, lowering, laying, aligning, fixing in position in pipe line, testing and commissioning of power actuated and manually operated DI D/F Sluice valves of reputed make (IS:14846 amended up to date) PN 1.0 class of following dia complete (including jointing material) including DI Dismantling joint and all material, labour, testing and commissioning along with pipe line as per Technical Specifications and as per direction of Engineer.					
4.7.7.2.1	450mm					
4.7.7.2.2	450mm	7 No				
4.7.7.2.3	700mm	1 No				
4.7.7.3	Installation, lowering, laying, aligning, fixing in position and jointing in pipe line, testing and					

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Item	Description	Quantity	Unit Price ^a		Total Price ^a	
			Local Currency Portion	Foreign Currency Portion	Local Currency Portion	Local Currency
1	2	3	4	5	6=3x4	7=3x5
	commissioning of DI dual plate check valves as per API:594 and API:598 of PN 1.0 rating of following dia (including jointing material), including DI Dismantling joint all material, labour, testing and commissioning as per Technical Specifications and as per direction of Engineer.					
4.7.7.3.1	NRV 450mm	7 No				
4.7.7.3.2	NRV 700mm	2 No				
4.7.7.4	Installation, lowering, laying, aligning, fixing in position, testing and commissioning of DI. D/F electrically operated long body butterfly valves (IS: 13095) PN-1.0 class of following dia complete (including jointing material) including DI Dismantling joint, all material, labour, testing along with pipe line and commissioning as per Technical Specifications and as per direction of Engineer.					
4.7.7.4.1	450mm	7 No				
4.7.7.4.2	700mm	2 No				
4.7.7.5	Installation, testing and commissioning of glycerin filled Pressure gauge of following ranges with isolation valve and tap off pipe complete in all respect as per technical specification and as per direction of Engineer.	7 No				
	Glycerine filled Pressure Gauge 0 to 10kg/cm ² 150mm diameter					
4.7.7.6	Installation, testing and commissioning of Electromagnetic Flow Meter etc. including all materials and making connection with pipeline required for Electromagnetic Flow Meter including					

Item	Description	Quantity	Unit Price ^a		Total Price ^a	
			Local Currency Portion	Foreign Currency Portion	Local Currency Portion	Local Currency
1	2	3	4	5	6=3x4	7=3x5
	cutting the pipe line etc. complete in all respect as per technical specification and as per direction of Engineer.					
4.7.7.6.1	EMF 600 mm	2 No				
4.7.7.6.2	EMF 400 mm	22 No				
4.7.7.6.3	EMF 300 mm	20 No				
4.7.7.6.4	EMF 200 mm	2 No				
4.7.7.6.5	EMF 150 mm	1 No				
4.7.7	Instalation, erecting, testing & commissioning of Electrically Operated Travelling Crane (EOT). Main girder & End Carriage fabricated from Rolled Steel Section, Gear Box for all motion, Electro Magnetic Friction Disc Type Brakes, all safety limit switches, LT wheels EN 9, Double Flanged 4No, with Sq. Cage motor of adequate rating (kW), duly painted mechanical cleaning and one coat of primer and two coat of synthetic paint and as per the direction of the Engineer. EOT Crane 10T, 9m span, 9m lift.	1 No				
4.7.8	Electrical Substation and system					
4.7.8.1	33kV Single Circuit Lattice Structure	1 set				
4.7.8.2	Installation, testing and commissioning of 33 kV Double Pole structure made of two nos. 10 m long PCC poles & 7 nos. MS Channel size 100x50x6mm with GO switch, DO fuse set and lightning arrestors with following specifications. GO: Off load type gang operated three pole Horizontal type switch suitable for 33kV, 800A, 3phase central post rotating double break isolator complete with MS Hardware, copper moving & fixed contacts, assembly of 9 Nos. Post Insulators, GI pipe of	2 set				

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Item	Description	Quantity	Unit Price ^a		Total Price ^a	
			Local Currency Portion	Foreign Currency Portion	Local Currency Portion	Local Currency
1	2	3	4	5	6=3x4	7=3x5
4.7.8.3	<p>suitable length for operation. DO: 3 Nos. Horizontal/Vertical mounted 33kV Horn Gap fuse set / Drop Out fuse set, 33kV barrel fuses mounted on 6 Nos. Post insulators. LA: 3 piece non linear resistor type lightning arrester of approved make suitable for 3 wire, 33kV oh line with rated voltage 30kV rms & nominal discharge current rating of 10 kA & complete with galvanized clamping arrangement, GI bolts, nuts, washers etc. as required. Jumpers:3 Nos. ACSR Dog Conductor mounted on post type insulators as required.</p> <p>The GO shall be operated by hand operated liver properly earthed with provision for locking mounted at 3'. Complete as per technical specifications and /or as directed by the Engineer.</p> <p>36 KV VCB Panel- Installation, testing & commissioning of 800 A, 36 KV indoor type, triple pole metal clad truck mounted horizontal draw out type circuit breaker enclosed in cubicle made of CRCA sheet steel of minimum 3 mm thickness, comply with IS-13118, IEC-56 and confirming to M-2 class. The cubicle panel shall be vermin proof and dust-tight and shall be of folded type construction. The switchgear and control gears complete with all necessary supporting framework, nuts and bolts etc for securing the same to the floor conforming to IEC62271/100-200 with ingress protection as IP-5X. The Indoor panel switch gear (circuit breakers-3 Nos, CTs-6 Nos, PTs -3 Nos etc) and control gear (relays, meters etc) shall be mounted on the same panel excluding civil works with principal parameters as under</p> <p>No. of Poles - 3 Rated Voltage - 36 KV Rated Insulation Level</p>	1 Set				

Item	Description	Quantity	Unit Price ^a		Total Price ^a	
			Local Currency Portion	Foreign Currency Portion	Local Currency Portion	Local Currency
1	2	3	4	5	6=3x4	7=3x5
	Lightning Impulse voltage - 170 kV(Peak)					
	One minute Power Frequency withstand voltage - 70 kV(rms) Frequency - 50 Hz Rated normal current - 800 A Short circuit breaking capacity - 25 kA Short circuit withstand current - 25 kA for 3 secs Max. operating time - less than 3 cycles Minimum operations at full rated short circuit breaking currents - 100 Rated Breaking capacity					
4.7.8.4	Symmetrical - 25 kA Asymmetrical - As per relevant standards Rated making capacity - 2.5x25 kA Operating mechanism - motor operated spring charged closing mechanism Heater/lamp/socket - 240V Control voltage - 110 VDC Vacuum Circuit Breakers with three interrupters mounted on same carriage having fixed & moving contacts in sealed envelop with vacuum below 10 ⁻⁶ torr. complete as per technical specifications and/or as directed by Engineer. The VCB shall include specified cubicle panel, Aluminium / Copper bus bars, Insulator, sleeves, PT, CT Supply, installation, testing & commissioning of 33kV Control & Relay Panel duly mounted with protective relays, metering equipment etc. required for the satisfactory operation of 33kV side of 33/0.4kV Power Transformers.	1 No				
4.7.8.5	Installation, Testing & Commissioning of HT metering	1 No				

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Item	Description	Quantity	Unit Price ^a		Total Price ^a	
			Local Currency Portion	Foreign Currency Portion	Local Currency Portion	Local Currency
1	2	3	4	5	6=3x4	7=3x5
4.7.8.6	<p>cubical panel as approved By DISCOMs fabricated out of 14 SWG CRCA sheet steel in two compartment & MS angle of size 60mmX6mm having provision for Following:</p> <p>(i) Provision for fixing Trivector Meter (To be supplied by DISCOMs)</p> <p>(ii) Provision for fixing of combined CT PT Set (To be supplied by DISCOMs)</p> <p>(iii) TT Block</p> <p>(iv) 6mm Bakelite sheet on all sides.</p> <p>Metering Cubicle</p> <p>Installation, fixing in position, testing and commissioning of lightening arrester set complete with 600mm x 600mm x 6mm thick G.I. earthing plate embedded below ground in earthing pit at 3.5 metre depth, G.I. strip of size 25mmx5mm thick from earthing plate</p>	1 set				
4.7.8.7	<p>Lightning Impulse voltage - 170 kV(Peak)</p> <p>Installation, testing and commissioning of Earthing of all substation equipment as per IS:3043 as per IEEE Standard 80-2000 (IEEE Guide for safety in AC Substation Grounding)</p>	1 Job				
4.7.8.8	<p>Installation, Laying , jointing, testing and commissioning of following size earth wire/strip in horizontal or vertical run in ground/surface/recess including riveting, soldering, saddles, making connection etc. as required.</p> <p>25mm x 3mm G.I.Strip</p> <p>Frequency - 50 Hz</p>	250 m				

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			Local Currency Portion	Foreign Currency Portion	Local Currency Portion	Local Currency
1	2	3	4	5	6=3x4	7=3x5
4.7.8.9	Installation, testing and commissioning of SF Rubber matting with one side corrugated as per IS specification 15652/2006 - 11 kV Rated normal current - 800 A	12 Sq.m				
4.7.9	Transformer	2 set				
4.7.9.1	Installing in correct aligned position, effecting proper connections, testing and commissioning of following rating out door type oil filled off circuit tap changer transformer with the following specification and confirming to IS 1180(Part 1 -2014) Thickness of transformer Tank (rolling tolerance as per IS) No Load Voltage ratio : 33/0.433 kV No. of phases / frequency : 3 Phases/ 50 Hz Type : Core type, double copper wound Cooling : ONAN					
	Vector Group : DYN11 Temperature rise (OIL/WINDING) : 40/50 deg C Off circuit Taps on HV side in the steps of 2.5%,+5 % to -10% Termination (HV) : Air filled cable end box suitable for 33 kV of adequate cable size Termination (LV) : Air filled cable end box suitable for 1.1 kV of adequate cable size The transformer shall be supplied with following fittings: (i)Bochholz Relay (ii)Conservator with drain valve					
	(iii)Magnetic Level Indicator (iv)Silica gel breather with oil seal (v) First filling of filtered oil as per IS : 335 including make up fill during installation of transformer plus 10%					

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Item	Description	Quantity	Unit Price ^a		Total Price ^a	
			Local Currency Portion	Foreign Currency Portion	Local Currency Portion	Local Currency
1	2	3	4	5	6=3x4	7=3x5
	extra oil (vi) off circuit switch (vii) Lifting lugs (viii) Earthing terminal- 2 nos. (ix) Thermometer pocket (x) Air release plug					
	(xi) Inspection cover (xii) Top filter valve - 1no. (xiii) Radiator with top & bottom shut off valves (xiv) 100 mm dial magnetic oil level guage with max. pointer & with alarm contacts (xv) Rating & Diagram plate (xvi) Bi-directional Plain/ Flanged Rollers (xvii) 150 mm dial Winding temperature indicator with max pointer and alarm & trip contacts (xviii) 150 mm dial Oil temperature indicator with max pointer and alarm & trip contacts					
4.7.9.2	(xix) Disconnecting facility of HV Cable box Transformers described as above and as per the following continuous rating 2000kVA Transformer (2000KVA capacity of transformer is minimum, however if the design indicates a higher capacity shall be considered). Installation, testing and commissioning of Automatic Power factor Improvement Panel to improve the power factor up to 0.95 lagging. This will include panel cubical, Microprocessor based intelligent power factor correction relay complete in all respect.	1 Set				
4.7.9.3	Installation, testing and commissioning of SF Rubber matting with one side corrugated as per IS	12 Sq.m				

Item	Description	Quantity	Unit Price ^a		Total Price ^a	
			Local Currency Portion	Foreign Currency Portion	Local Currency Portion	Local Currency
1	2	3	4	5	6=3x4	7=3x5
4.7.10 4.7.10.1	specification 15652/2006 Rated making capacity - 2.5x25 kA LT Panel CWPS Installation, testing and commissioning of wall/free standing floor mounted dust and vermin proof compartmentalised cubical panel for 0.415kV including the suitable size of electrolytic grade Copper Bus Bars, insulators etc., for the following feeders:	1 Set				
4.7.10.2	1. 2 Nos. Incoming ACB from the transformer- This will be provided with (but not limited to) Digital Multifunction meter compatible to SCADA, metering, Protection CT's, IDMT 3O/C&1 E/F, indicating lamps, control fuse , wiring etc. complete in all respect 2. 1No. ACB for Bus Coupler. This will be provided with (but not limited to) without release Protection CT's, IDMT 3 O/C & 1 E/F, Indicating Lamps, Control Fuses and wiring etc. complete in all respect. 3. MCCB panels for APFC Panel, Pumping plant, Above panels shall be provided with- (but not limited to) metering CTs, multi function meter compatible to scada, Ampermeter with SS, Voltmeter with SS, Indicating Lamps, Control Fuse, wiring etc. complete in all respect. (Minimum No.9) 4.MCCB panels for auxiliary and spare (Minimum No.6) Above panels shall be provided with- (but not limited to) metering CTs, multi function meter compatible to scada, Ampermeter with SS, Voltmeter with SS, Indicating Lamps, Control Fuse, wiring etc. complete in all respect. MCCB shall be provided with shunt release, Under voltage release and Earth fault module. Installation, testing and commissioning of Bus Trunking arrangement in convenient sections complete with	1 Job				

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Item	Description	Quantity	Unit Price ^a		Total Price ^a	
			Local Currency Portion	Foreign Currency Portion	Local Currency Portion	Local Currency
1	2	3	4	5	6=3x4	7=3x5
	housing of galvanized sheet steel of minimum 1.5mm thickness, Copper bus bar for use of 3phase-4Wire 415Volt A.C supply with degree of protection ip-42 for the minimum 2000A rating including jointing of Section, flexible joints, expansion joints and earthing with 2 runs of aluminum strips,etc. From Transformer LT to incoming of LT Panel.					
4.7.10.3	Installation, Laying, jointing, testing and commissioning of XLPE insulated sheathed cable of 1.1 kV grade with aluminium conductor Armoured of IS:7098-I/1554-1 approved make in ground as per IS:1255 including excavation of 30cmx75cm size trench, 25 cm thick under layer of sand, IInd class bricks covering, refilling earth, compaction of earth, making necessary connection, testing etc. as required of size and length for the pumping stations..	1 Job				
4.7.10.4	Installation, testing and commissioning of Battery Charger, battery bank of min 150 AH capacity comprising SMF/VRLA batteries, MS / Teakwood battery stand, interconnect wiring etc. as required complete in all respect.	1 set				
4.7.11	Installation, testing and commissioning of internal and external lighting of all campus including Raw water pumping station, Sedimentation Pumping Station, Clear Water pumping Station and all other buildings to be constructed under this tender. The illumination level to be provided shall be in accordance to the lux level mentioned elsewhere in technical specifications. All lights shall be LED.	1 Job				
4.7.12	Installation, testing and commissioning of 3pin 5Amp,	1 Job				

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			Local Currency Portion	Foreign Currency Portion	Local Currency Portion	Local Currency
1	2	3	4	5	6=3x4	7=3x5
4.7.13	and 6 pin15Amp light and power points as per requirement to be decided by the Engineer In charge in all buildings under this tender.	1 Lot				
4.7.14	Installation, testing and commissioning of Ceiling fans as per requirement to be decided by the Engineer Incharge in all buildings under this tender.	1 Lot				
4.8	Automation and equipment Installation, testing and commissioning of the SCADA system with the following equipment					
4.8.1	For Raw water Pump House					
4.8.2	PLC Panel with required hardware & software	1 Lot				
4.8.3	UPS with batteries	1 Lot				
4.8.4	Level Instruments	2 Nos				
4.8.5	Temperature Instruments	6 Nos				
4.8.6	Vibration monitoring System	6 Nos				
4.8.7	Pressure Transmitter	7 Nos				
4.8.8	Flow Instruments	1 Nos				
4.8.9	Control and Instrumentation cables	1 Lot				
4.8.10	Instrumentation Earthing materials with accessories	1 Lot				
4.8.11	Cable trays/supports for cable laying of requires size	1 Lot				
4.8.12	Equipment for Data transmission via Radio frequency	1 Lot				
	WTP					
4.8.13	Sedimentation Pump house					
4.8.14	PLC Panel with required hardware & software	1 Lot				
4.8.15	UPS with batteries	1 Lot				

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Item	Description	Quantity	Unit Price ^a		Total Price ^a	
			Local Currency Portion	Foreign Currency Portion	Local Currency Portion	Local Currency
1	2	3	4	5	6=3x4	7=3x5
4.8.16	Level Instruments	2 Nos				
4.8.17	Pressure Transmitter	7 Nos				
4.8.18	Flow Instruments	1 Nos				
4.8.19	Instrumentation Earthing materials with accessories	1 Lot				
Clarifier Area						
4.8.20	PLC Panel with required hardware & software	1 Lot				
4.8.21	UPS with batteries	1 Lot				
4.8.22	Level Instruments	1 Nos				
4.8.23	Flow Instruments	1 Nos				
4.8.24	Instrumentation Earthing materials with accessories	1 Nos				
Filter Area						
4.8.25	PLC Panel with required hardware & software	1 Lot				
4.8.26	UPS with batteries	1 Lot				
4.8.27	Remote Filter PLC(2 Nos) with hardware & software accessories	2 Lot				
4.8.28	Level Instruments	13 Nos				
4.8.29	Pressure Instruments includes differential pressure instruments	11 Nos				
4.8.30	Flow Instruments	2 Nos				
4.8.31	Instrumentation Earthing materials with accessories	1 Lot				
Chemical Area						
4.8.32	PLC Panel with required hardware & software	1 Lot				
4.8.33	UPS with batteries	1 Lot				
4.8.34	Flow Instruments	3 Nos				
4.8.35	Level Instruments	9 Nos				
4.8.36	Pressure Transmitter	6 Nos				
4.8.37	Instrumentation Earthing materials with accessories	1 Lot				
Sludge Area						

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			Local Currency Portion	Foreign Currency Portion	Local Currency Portion	Local Currency
1	2	3	4	5	6=3x4	7=3x5
4.8.38	PLC Panel with required hardware & software	1 Lot				
4.8.39	UPS with batteries	1 Lot				
4.8.40	Flow Instruments	4 Nos				
4.8.41	Level Instruments	6 Nos				
4.8.42	Pressure Transmitter	4 Nos				
4.8.43	Instrumentation Earthing materials with accessories	1 Lot				
	Chlorine Area					
4.8.44	PLC Panel with required hardware & software	1 Lot				
4.8.45	UPS with batteries	1 Lot				
4.8.46	Flow Instruments	2 Nos				
4.8.47	Pressure Transmitter	12 Nos				
4.8.48	Instrumentation Earthing materials with accessories	1 Lot				
	Clear water pump house					
4.8.49	PLC Panel with required hardware & software	1 Lot				
4.8.50	UPS with batteries	1 Lot				
4.8.51	Level Instruments	4 Nos				
4.8.52	Temperature Instruments	7 Nos				
4.8.53	Vibration monitoring System	7 Nos				
4.8.54	Pressure Transmitter	9 Nos				
4.8.55	Flow Instruments	2 Nos				
4.8.56	Instrumentation Earthing materials with accessories	1 Lot				
4.8.57	Equipment for Data transmission via Radio frequency	1 Lot				
4.8.58	Control and Instrumentation cables for WTP(includes accessories like glands, lugs, etc)	1 Lot				
4.8.59	Communication Cables inside WTP(fiber optic cable)	1 Lot				
4.8.60	Cable trays/supports for cable laying of requires size	1 Lot				
4.8.61	2 no's of SCADA operator station(Required Hard ware & Software Licensed) of WYP with control desk and its	2 Lot				

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			Local Currency Portion	Foreign Currency Portion	Local Currency Portion	Local Currency
1	2	3	4	5	6=3x4	7=3x5
4.8.62	accessories 2 no's of SCADA server station(Required Hard ware & Software Licensed) WTP with control desk and its accessories	2 Lot				
4.8.63	2 no's of SCADA operator station(Required Hard ware & Software Licensed) for BMC with control desk and its accessories	2 Lot				
4.8.64	Online water quality analyzers like Turbidity, pH, chlorine etc.	1 Lot				
	Distribution system (Phase 1)					
4.8.65	PLC Panel with required hardware & software	48 Lot				
4.8.66	UPS with batteries	48 Lot				
4.8.67	Level Transmitter	48 Nos				
4.8.68	Equipment for Data transmission via Radio frequency	48 Lot				
4.9	WTP Installation, testing and commissioning of Equipment such as pipe connection to all the components of WTP including suitable valves and ,measuring devices, chemical dosing pipe lines etc complete pumps, motors, scrapping equipment's, suitable capacity of Filter Bach wash pumps, Air Blowers for filter back wash, suitable capacity of vacuum type chlorinators with motive water pumps for pre and post chlorination, Emergency tonner leakage control kit, exhaust equipment, scrubbing system with working and standby suction fan, absiration tower, scrubbing media tank, working and standby scrubbing media circulation pumps, EOT of suitable capacity where required, submerged mixers, solid bowl type centrifuge for sludge dewatering unit , agitator laboratory equipment etc complete suitable for 90 MLD					

Item	Description	Quantity	Unit Price ^a		Total Price ^a	
			Local Currency Portion	Foreign Currency Portion	Local Currency Portion	Local Currency
1	2	3	4	5	6=3x4	7=3x5
	Treatment Plant including procuring, installation, testing and commissioning etc complete and as directed by Engineer					
4.9.1	Motorised 1300 mm dia DI Butterfly valves at inlet	1 No				
4.9.2	Motorised 800 mm DI Butterfly valves at Flash Mixer to Flocculator	2 Nos				
4.9.3	Motorised 400 mm DI Butterfly valves at Filter out let	12 Nos				
4.9.4	Motorised 400 mm DI Butterfly valves at Flow Restrictor valve	12 Nos				
4.9.5	Motorised 500 mm DI Butterfly valves at Wash water inlet	12 Nos				
4.9.6	200 mm sluice valve for Drain valve for manual operation	12 Nos				
4.9.7	Motorised 250 mm DI Butterfly valves at scour Air inlet	12 Nos				
4.9.8	400 mm Globe valve for Air Purge line	12 Nos				
4.9.9	Motorised 500 mm DI Sluice valves at Wash water line from OHT	2 Nos				
4.9.10	Motorised 250 mm DI Butterfly valves at Air Line from Air Blower	6 Nos				
4.9.11	Motorised 300 mm DI Butterfly valves at Back wash Pump	2 Nos				
4.9.12	300 mm DI Isolation valve at Back wash Pump	2 Nos				
	Motorised Gates					
4.9.13	400 mm x 400 mm at Filter inlet	12 Nos				
4.9.14	600mm x 600 mm at Flash Mixer	2 Nos				
4.9.15	600 mm x 600 mm at Flocculator	4 Nos				
4.9.16	800 mm x 800 mm at Wash water outlet	6 Nos				
	Chlorine Dosing Pipelines					
4.9.17	PP Ball Valves - 400 mm dia at Line for Alum/PAC Dosing	6 Nos				
4.9.18	PP Ball Valves - 400 mm dia at Line for Poly Electrolyte	6 Nos				

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			Local Currency Portion	Foreign Currency Portion	Local Currency Portion	Local Currency
1	2	3	4	5	6=3x4	7=3x5
4.9.19	Dosing PP Ball Valves - 400 mm dia at Line for Dewatering Poly	2 Nos				
4.9.20	PP Ball Valves - 400 mm dia at Line for Line for coagulating Poly in Waste recovery system	4 Nos				
4.9.21	Pipes 900 mm dia MS pipes -for Flash Mixer to Flocculator	20 m				
4.9.22	900 mm dia MS pipes -for Flash Mixer to Flocculator	30 m				
4.9.23	400 mm DI K9 pipe for Filtered water outlet	64 m				
4.9.24	200 mm DI K9 pipe for Air inlet	200 m				
4.10	Major Equipment in Water Treatment Plant Installation, Erection, Testing and commissioning of the Major Equipment suitable for WTP components					
4.10.1	Slow speed Motor with Pedal arrangement for Flash Mixer	2 Set				
4.10.2	Flocculation and sludge scarping arrangement for Plate Settler and Flocculation/Clarifier Units	4 Set				
4.10.3	Filter Back wash pumps with required capacity	2 Nos				
4.10.4	Twin Lobe type Air Blowers for filter backwash with required capacity	2 Nos				
4.10.5	Monorail Hoist	2 Nos				
4.10.6	Filter Media (Sand & Gravel)	2610.14 Tonne				
4.10.7	Chlorination System					
4.10.8	Vaccum Type Chlorinator for pre Chlorination Capacity 12 kg/hour each complete with motive water pumps and all other accessories1.Vaccum Type Chlorinator for post Chlorination Capacity 12 kg/hour each complete with motive water pumps and all other accessories -2 Nos2.Chlorine room safety kit- 5 Set3.Emergency tonner leakage control Kit - 1 No4.Scrubbing system with working and stand by suction fan, absorption tower,	1 set				

Bihar Urban Development Investment Program

Improvement of Water Supply System in Bhagalpur Municipal Corporation (BH/WS/02)

Item	Description	Quantity	Unit Price ^a		Total Price ^a	
			Local Currency Portion	Foreign Currency Portion	Local Currency Portion	Local Currency
1	2	3	4	5	6=3x4	7=3x5
4.10.9	scrubbing media tank, working and standby scrubbing media circulation pumps etc- 1 Set5.Exhaust Equipmet - 1 set EOT- 2 TONNE	2 Nos				
4.10.10	Dirty Back wash Holding Tank Submerged Mixers	2 Nos				
4.10.11	Motor Submersible type pumps of 430 cu. m/hour capacity at 15 m head	3 Nos				
4.10.12	Mixers for coagulation polyelectrolyte solution preparation tank	2 Nos				
4.10.13	Coagulation Polyelectrolyte dosing (metering) Pumps	2 Nos				
4.10.14	Thickner Equipment for mixing, flocculation coagulation, sludge scrapping and clarification Thickned sludge Tank	3 Set				
4.10.15	Rotating Screw type positive displacement pumps for transferring sludge to dewatering units Capacity 25 Cu. M /hour at 30 m head with stand by	1 set				
4.10.16	Chain Pulle Block for Sludge Transfer Pumps Centrifuge , Sludge Dewatering	1 No				
4.10.17	Solid Bowl Type Centrifuge Capacity 25Cu.M /hour slurry basis and 20 Ton dry solids per daywith standby Dewatering Poly Solution Preparation & Dosing	1 set				
4.10.18	Agitator for solution preparation Tank	2 Nos				
4.10.19	Polyelectrolyte dosing (metering) Pumps rang 0.25lit/min to 2.5 lit /min	2 Nos				
4.10.20	Polyelectrolyte Solution Tanks (2000 Lit Capacity)	2 Nos				
4.10.21	Coagulating Polyelectrolyte Solution Preparation and Dosing Agitator for solution preparation Tank	2 Nos				

Item 1	Description 2	Quantity 3	Unit Price ^a		Total Price ^a	
			Local Currency Portion 4	Foreign Currency Portion 5	Local Currency Portion 6=3x4	Local Currency 7=3x5
4.10.22	Polyelectrolyte dosing (metering) Pumps rang 0.25lit/min to 2.5 lit /min	2 Nos				
4.10.23	Polyelectrolyte Solution Tanks (2000 Lit Capacity)	2 Nos				
4.10.24	Alum/ PAC Dosing Agitator for solution preparation Tanks (replacement of Existing Mixers)	2 Nos				
4.10.25	Metering Pumps for ALUM/PAC dosing pump range2.5lit/min to 25 lit/min at 10 m head Polyelectrolyte Dosing	2 Nos				
4.10.26	Agitator for solution preparation Tanks (replacement of Existing Mixers)	2 Nos				
4.10.27	Metering Pumps for Polyelectrolyte dosing dosing range 0.25 lit/min to 2.5 lit/min	2 Nos				
4.10.28	Poly solution tanks 10000 lit cap.	2 Nos				
4.10.29	Laboratory Equipment	1 Set				
4.11	Any other items to be included. The contractor has to list the items that are to be carried out along with break up cost details for each item	1 Set				
4.12	Provisional Sum for STI. STD and HIV/AIDS alleviation program ^c	1				
TOTAL Column 6 and column7 to be carried forward to Schedule No. 5: Grand Summary						

Commented [P1]: How it will be evaluated if only one bidder
quoted this itme
Mr Bala to respond

Name of Bidder _____

Signature of Bidder _____

PRICE PROPOSALS - PART A: DESIGN-BUILD COMPONENTS

Name of Project	Bihar Urban Development Investment Program – Tranche 2 (ADB Loan: Applied for / Project No. IND-41603-023)
Name of Employer:	Bihar Urban Infrastructure Development Corporation Limited (BUIDCo)
Contract Title:	Improvement of Water Supply System in Bhagalpur Municipal Corporation (BWSP 02)
Contract Package No:	BH/WS/02
Bidder's Name :	
Schedule No. 05: GRAND SUMMARY	

Schedule No	Title	Total Price ^a	
		Foreign	Local
1	Plant and Mandatory Spare Parts Supplied from Abroad ^b		
2	Plant and Mandatory Spare Parts Supplied from Within the Employer's Country ^b		
3	Design Services		
4	Installation and Other Services		
Grand Total			

Name of Bidder _____

Signature of Bidder _____

Bihar Urban Development Investment Program

Improvement of Water Supply System in Bhagalpur Municipal Corporation (BH/WS/02)

- a Specify currency in accordance with ITB 15.1 of the BDS. Create additional columns for up to a maximum of three foreign currencies if so required.
- b Taxes and/or duties from Schedules 1 and 2 may be added to the contract price in accordance with GCC Clause 14 but excluded from Bid evaluation in accordance with ITB 34.

PRICE PROPOSALS - PART A: DESIGN-BUILD COMPONENTS

Name of Project	Bihar Urban Development Investment Program – Tranche 2 (ADB Loan: Applied for / Project No. IND-41603-023)
Name of Employer:	Bihar Urban Infrastructure Development Corporation Limited (BUIDCo)
Contract Title:	Improvement of Water Supply System in Bhagalpur Municipal Corporation (BWSP 02)
Contract Package No:	BH/WS/02
Bidder's Name :	
Schedule No. 06: RECOMMENDED SPARE PARTS	

S.No.	Item Description	Quantity	Unit Price ^a		Total Price ^a	
			EXW Local Parts Local Currency	CIP Imported Parts Foreign Currency	Local Currency Portion	Foreign Currency Portion
1	2	3	4	5	6= 3 x 4	7 = 3 x 5

Bihar Urban Development Investment Program

Improvement of Water Supply System in Bhagalpur Municipal Corporation (BH/WS/02)

Name of Bidder _____

Signature of Bidder _____

a Specify currency in accordance with ITB 15.1 of the BDS.

PRICE PROPOSALS - PART B: ITEM RATE COMPONENTS - CONSTRUCTION WORKS

Name of Project	Bihar Urban Development Investment Program – Tranche 2 (ADB Loan: Applied for / Project No. IND-41603-023)
Name of Employer:	Bihar Urban Infrastructure Development Corporation Limited (BUIDCo)
Contract Title:	Improvement of Water Supply System in Bhagalpur Municipal Corporation (BWSP 02)
Contract Package No:	BH/WS/02
Bidder's Name :	
Schedule No. 07: RAW WATER MAIN	

S.No.	Item Description	Unit	Quantity	Rate To be Quoted by Bidder (INR)		AMOUNT to be Quoted by Bidder (INR)
				Figures	Words	
7.1	Clearing and Grubbing RoadLand .(Clearing and grubbing road land including uprooting rank vegetation, grass, bushes, shrubs, saplings and trees girth up to 300 mm, removal of stumps of trees cut earlier and disposal of unserviceable materials and stacking of serviceable material to be used or auctioned up to a lead of 1000 meters including removal and disposal of top organic soil not exceeding 150 mm in thickness.) In area of light jungle	hectare	1.02			
7.2	Dismantling of Roads					
7.2.1	Dismantling of flexible pavements and disposal of dismantled materials up to a lead of 8 KM). Bituminous course (by mechanical means)	cum	267.26			

[Bihar Urban Development Investment Program](#)

[Improvement of Water Supply System in Bhagalpur Municipal Corporation \(BH/WS/02\)](#)

S.No.	Item Description	Unit	Quantity	Rate To be Quoted by Bidder (INR)		AMOUNT to be Quoted by Bidder (INR)
				Figures	Words	
7.2.2	Dismantling of cement concrete pavement by mechanical means using pneumatic tools, breaking to pieces not exceeding 0.02 cum in volume and stock piling at designated locations and disposal of dismantled materials up to a lead of 8 KM.	cum	351.9			
7.3	Earth work in excavation by mechanical means (Hydraulic excavator)/ manual means over areas (exceeding 30cm in depth. 1.5m in width as well as 10 sqm on plan) including disposal of excavated earth, lead up to 50m and lift up to 1.5m, disposed earth to be levelled and neatly dressed. All Kinds of soil					
	From RW Bridge to Sedimentation Tank					
	By-pass line					
7.3.1	Depth from 0m to 1.5m	cum	8877.83			
7.3.2	Depth beyond 1.5m to 3m	cum	5924.47			
7.3.3	Supplying and Filling in plinth with local sand and under floors including, watering, ramming consolidating and dressing complete.	cum	591.86			
7.3.4	Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20 cm in depth:	cum	10715.53			

Bihar Urban Development Investment Program

Improvement of Water Supply System in Bhagalpur Municipal Corporation (BH/WS/02)

S.No.	Item Description	Unit	Quantity	Rate To be Quoted by Bidder (INR)		AMOUNT to be Quoted by Bidder (INR)
				Figures	Words	
7.3.5	consolidating each deposited layer by ramming and watering lead Disposal of surplus earth, brick, bats, soft and hard rock pieces and dismantled materials of road by and 8km from site of work to out side the city including supply of all material, labour, T&P etc. Required for proper completion of the work.	cum	4,705.92			
7.4	Pumping out water caused by springs, tidal or river seepage, broken water mains or drains and the like.	KL	10000.00			
7.5	Close timbering in trenches including strutting, shoring and packing cavities (wherever required) complete. (Measurements to be taken of the face area timbered):					
7.5.1	Depth not exceeding 1.5 m.	sqm	7650.00			
7.5.2	Depth exceeding 1.5 m but not exceeding 3 m.	sqm	5105.10			
7.5.3	Extra for planking, strutting and packing materials for cavities (in close timbering) if required to be left permanently in position (Face area of timber permanently left to be measured)	sqm	127.55			
7.6	Open timbering in trenches including strutting and shoring complete (Measurements to be					

Bihar Urban Development Investment Program

Improvement of Water Supply System in Bhagalpur Municipal Corporation (BH/WS/02)

S.No.	Item Description	Unit	Quantity	Rate To be Quoted by Bidder (INR)		AMOUNT to be Quoted by Bidder (INR)
				Figures	Words	
	taken of the face area timbered).					
7.6.1	Depth not exceeding 1.5 m.	sqm	7573.50			
7.6.2	Depth exceeding 1.5 m but not exceeding 3 m	sqm	5054.05			
7.7	BARRICADING					
7.7.1	Providing sal ballah barricading with departmental sal ballah average 150 dia. And 2M long sal ballah post at interval of 2.5M C/C fixed 0.5 M average below ground, packed with earth and Brick bats, well watered and rammed with three rows of average 100mm dia. Sal ballah horizontal runners fixed with iron spikes and wires, white washing one coat to exposed surface, dismantling the barricade after function, filling the holes, excluding carriage of sal ballah from and to godown up to 5K.M. lead, stacking them in countable stacks in godown including cost of all labour and materials and taxes all complete job as per specification and direction of E/l.	m	255			
7.8	Plain/Reinforced cement concrete in open foundation complete as per drawing and technical specifications PCC Grade M30	cum	86.00			
7.9	Providing, Laying & Jointing of M.S. Pipe:					

S.No.	Item Description	Unit	Quantity	Rate To be Quoted by Bidder (INR)		AMOUNT to be Quoted by Bidder (INR)
				Figures	Words	
7.9.1	Providing m.s. plate welded/spirally welded mild steel pipes and specials. Fabricating the same for the pressure 15 Kg/cm ² . mild steel pipes and specials, Tee, bends, reducers, tail pieces, flanges, blank flange etc. as shown in drawings or as directed by the engineer using approved quality 10 mm thick MS plates conforming to I.S. 2062 including marking, cutting, rolling, bending and welding using approved quality of electrodes conforming to IS 6916:1978. Item includes providing at site, testing with radiography, as per technical specification and direction of E.I.C. (density of MS Plate assumed as 7850 kg/cum). (Rate is exclusive of excise duty)					
7.9.1.1	a) 1321 mm dia (10mm wall thickness)	m	2550.00			
7.9.1.2	b) 900 mm dia (10mm wall thickness)	m	180			
7.9.2	Laying & fixing of 1321mm dia M.S Steel pipes & specials including Lowering, laying in trenches/on chairs, lifting, lowering, cutting, braking, if required, joining, fitting excluding welding of mild steel pipes and specials of all sizes and shapes on site with the help of labour / crane pulley etc. as directed by the engineer in-charge etc. complete. The item includes all works required to fix in place the mild steel pipes and specials stacked at site to join all parts properly as directed by the engineer in-charge.					

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Improvement of Water Supply System in Bhagalpur Municipal Corporation (BH/WS/02)

S.No.	Item Description	Unit	Quantity	Rate To be Quoted by Bidder (INR)		AMOUNT to be Quoted by Bidder (INR)
				Figures	Words	
7.9.2.1	a) 1321mm dia (10mm wall thickness)	kg	830735.04			
7.9.2.2	b) 900 mm dia (10mm wall thickness)	kg	39951.63			
7.9.2.3	c) for specials, Tee, Bends, Chairs etc.	kg	87068.67			
7.9.3	Jointing m.s pipe by ARC welding using approved quality of electrodes including cutting the end of the pipe ,if required, by oxy-Acitaline Gas and the pipe end should be prepared carefully, a gap of 3.2 mm must be mentioned accurately all the way around the gap. No back up ring to be used. The root pass must penetrate into both pipes, cleaning each bead before starting the next bead etc. all complete as per specification in accordance with I S code 6916: 1978.					
7.9.3.1	a) 1321mm dia (10mm wall thickness)	No.	510.00			
7.9.3.2	b) 900 mm dia (10 mm wall thickness)	No.	36.00			
7.9.4	Hydraulic Testing of M.S. pipeline to specified pressure of 10 kg/cm² including cost of all materials and labor and water for testing for the length up to 1km, using reciprocating type pumps which should be able to provide specified test pressure gauges and other necessary equipment, labor, operation charges etc., required for testing. The rate under this item shall	LS	1.00			

Bihar Urban Development Investment Program

Improvement of Water Supply System in Bhagalpur Municipal Corporation (BH/WS/02)

S.No.	Item Description	Unit	Quantity	Rate To be Quoted by Bidder (INR)		AMOUNT to be Quoted by Bidder (INR)
				Figures	Words	
	include cost of retesting, if necessary etc., complete as per specifications.					
7.9.5	Making 12 mm thick inner lining/guniting with Cement mortar (1:3) (1 cement:3 coarse sand) by mechanical means including curing etc. complete as per specification and direction of the Engineer-in-charge	sqm	10582.61			
7.9.6	Cement mortar Grouting on the outside face of the pipe in 1:3 CM; 40 mm thick with steel watering, curing etc. complete and as per direction of engineer in charge.	sqm	10582.61			
7.9.7	Finishing with Epoxy paint (two or more coats) at all locations prepared and applied as per manufacturer's specifications including appropriate priming coat, preparation of surface, etc. complete.					
7.9.7.1	a) 1321 mm dia	sqm	10582.61			
7.9.7.2	b) 900 mm dia	sqm	508.94			
7.10	Providing and fixing C.I. sluice valves (with cap) complete with bolts, nuts, rubber insertions etc. (the tail pieces if required will be paid separately)					
	300 mm diameter Class II	each	3.00			

S.No.	Item Description	Unit	Quantity	Rate To be Quoted by Bidder (INR)		AMOUNT to be Quoted by Bidder (INR)
				Figures	Words	
7.11	Reinforced Cement Concrete of M30 grade :					
7.11.1	Plain/Reinforced cement concrete in open foundation complete as per drawing and technical specifications	cum	29.12			
7.12	Reinforcement					
7.12.1	Reinforcement for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. Thermo-Mechanically Treated bars TMTC-500	MT	0.031			
7.13	Centering and shuttering including strutting, propping etc. And removal of form for.:-					
	Foundations, footings, bases of columns etc. for mass concrete.					
	Above 20 cm width	sqm	72.80			
7.14	Road Restoration					
7.14.1	Bituminous Road					
7.14.1.1	Water Bound Macadam (Providing, laying, spreading and compacting stone aggregates of specific sizes to water bound macadam specification including spreading in uniform thickness, hand packing, rolling with vibratory					

Bihar Urban Development Investment Program

Improvement of Water Supply System in Bhagalpur Municipal Corporation (BH/WS/02)

S.No.	Item Description	Unit	Quantity	Rate To be Quoted by Bidder (INR)		AMOUNT to be Quoted by Bidder (INR)
				Figures	Words	
	roller 8-10 tonnes / Smooth 3 wheeled Steel Roller in stages to proper grade and camber, applying and brooming requisite type of screening/ binding Materials to fill up the interstices of coarse aggregate, watering and compacting to the required density.) By Manual Means					
	Using Screening Crushable type such as Moorum or Gravel With Smooth 3 wheeled Steel Roller	cum	200.45			
7.14.1.2	Prime coat (Providing and applying primer coat with bitumen emulsion on prepared surface of granular Base including clearing of road surface and spraying primer at the rate of 0.60 kg/sqm using mechanical means.)	sqm	1336.30			
7.14.1.3	Providing and applying tack coat with bitumen emulsion using emulsion pressure distributor at the rate of 0.20 kg per sqm on the prepared bituminous/granular surface cleaned with mechanical broom.	sqm	1336.30			
7.14.1.4	Bituminous Macadam (Providing and laying bituminous macadam with 100-120 TPH hot mix plant producing an average output of 75 tonnes per hour using crushed aggregates of specified grading premixed with bituminous binder, transported to site, laid over a previously prepared surface with paver finisher to the					

S.No.	Item Description	Unit	Quantity	Rate To be Quoted by Bidder (INR)		AMOUNT to be Quoted by Bidder (INR)
				Figures	Words	
	required grade, level and alignment and rolled as per clauses 501.6 and 501.7 to achieve the desired compaction)					
	for Grading I (40 mm nominal size)	cum	53.45			
7.14.1.5	Bituminous Penetration Macadam (Construction of penetration macadam over prepared Base by providing a layer of compacted crushed coarse aggregate using chips spreader with alternate applications of bituminous binder and key aggregates and rolling with a smooth wheeled steel roller 8-10 tonne capacity to achieve the desired degree of compaction) 50 mm thick	sqm	1336.30			
7.14.2	CEMENT CONCRETE ROAD					
7.14.2.1	Sand Filling 100 mm in foundation trenches as per Drawing & Technical Specification.	cum	175.95			
7.14.2.2	Dry Lean Cement Concrete Sub- base (Construction of dry lean cement concrete Sub-base over a prepared sub-grade with coarse and fine aggregate conforming to IS: 383, the size of coarse aggregate not exceeding 25 mm, aggregate cement ratio not to exceed 15:1, aggregate gradation after blending to be as per table 600-1, cement content not to be less than 150 kg/ cum, optimum moisture content to be					

Bihar Urban Development Investment Program

Improvement of Water Supply System in Bhagalpur Municipal Corporation (BH/WS/02)

S.No.	Item Description	Unit	Quantity	Rate To be Quoted by Bidder (INR)		AMOUNT to be Quoted by Bidder (INR)
				Figures	Words	
	determined during trial length construction, concrete strength not to be less than 10 Mpa at 7 days, mixed in a batching plant, transported to site, laid with a paver with electronic sensor, compacting with 8-10 tones vibratory roller, finishing and curing.)					
7.14.2.3	100 mm thick Cement Concrete Pavement (Construction of un-reinforced, dowel jointed, plain cement concrete pavement over a prepared sub base with 43 grade cement @ 400 kg per cum, coarse and fine aggregate conforming to IS 383, maximum size of coarse aggregate not exceeding 25 mm, mixed in a batching and mixing plant as per approved mix design, transported to site, laid with a fixed form or slip form paver, spread, compacted and finished in a continuous operation including provision of contraction, expansion, construction and longitudinal joints, joint filler, separation membrane, sealant primer, joint sealant, debonding strip, dowel bar, tie rod, admixtures as approved, curing compound, finishing to lines and grades as per drawing	cum	117.3			
7.15	CC Road Surge protection by stand pipe 150mm dia flange 10m height etc. complete and as per	cum No.	234.60 2.00			

Bihar Urban Development Investment Program

Improvement of Water Supply System in Bhagalpur Municipal Corporation (BH/WS/02)

S.No.	Item Description	Unit	Quantity	Rate To be Quoted by Bidder (INR)		AMOUNT to be Quoted by Bidder (INR)
				Figures	Words	
	direction of engineer in charge.					
7.16	Providing Cathodic Protection arrangement in the Raw water main	No.	2.00			
Subtotal for Schedule No.07				In Figures		
				In Words		

PRICE PROPOSALS - PART B: ITEM RATE COMPONENTS - CONSTRUCTION WORKS

Name of Project	Bihar Urban Development Investment Program – Tranche 2 (ADB Loan: Applied for / Project No. IND-41603-023)
Name of Employer:	Bihar Urban Infrastructure Development Corporation Limited (BUIDCo)
Contract Title:	Improvement of Water Supply System in Bhagalpur Municipal Corporation (BWSP 02)
Contract Package No:	BH/WS/02
Bidder's Name :	
Schedule No. 08: CLEAR WATER RISING MAIN	

S.No.	Item Description	Unit	Quantity	Rate To be Quoted by Bidder (INR)		AMOUNT to be Quoted by Bidder (INR)
				Figures	Words	
8.1	DISMANTLING OF ROADS					
8.1.1	Dismantling of flexible pavements and disposal of dismantled materials up to a lead of 8 KM). Bituminous course (by mechanical means)					
	Bituminous Road	cum	1204.14			
8.1.2	Dismantling of cement concrete pavement by mechanical means using pneumatic tools, breaking to pieces not exceeding 0.02 cum in volume and stock piling at designated locations and disposal of dismantled materials up to a lead of 8 KM.					

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Improvement of Water Supply System in Bhagalpur Municipal Corporation (BH/WS/02)

S.No.	Item Description	Unit	Quantity	Rate To be Quoted by Bidder (INR)		AMOUNT to be Quoted by Bidder (INR)
				Figures	Words	
	Cement Concrete (CC) Road	cum	16770.6			
8.2	EARTHWORK Earth work in excavation by mechanical means (Hydraulic excavator)/ manual means over areas (exceeding 30cm in depth. 1.5m in width as well as 10 sqm on plan) including disposal of excavated earth, lead upto 50m and lift up to 1.5m, disposed earth to be levelled and neatly dressed. All Kinds of soil					
8.2.1	Depth from 0 m to 1.5					
8.2.1.1	150	cum	222.30			
8.2.1.2	200	cum	838.25			
8.2.1.3	250	cum	0			
8.2.1.4	300	cum	1,370.52			
8.2.1.5	350	cum	9440.27			
8.2.1.6	400	cum	1477.26			
8.2.1.7	450	cum	3726.38			
8.2.2	Depth beyond 1.5m to 3m					

S.No.	Item Description	Unit	Quantity	Rate To be Quoted by Bidder (INR)		AMOUNT to be Quoted by Bidder (INR)
				Figures	Words	
8.2.2.1	500	cum	559.55			
8.2.2.2	600	cum	3613.67			
8.2.2.3	700	cum	13507.20			
8.2.2.4	750	cum	0.00			
8.2.2.5	800	cum	4980.76			
8.2.2.6	900	cum	9885.33			
8.3	BACKFILLING					
8.3.1	Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20 cm in depth: consolidating each deposited layer by ramming and watering lead	cum	40705.22			
8.3.2	Disposal of surplus earth, brick, bats, soft and hard rock pieces and dismantled materials of road by and 8km from site of work to out side the city including supply of all material, labour, T&P etc. Required for proper completion of the work.	cum	8916.25			
8.4	OPEN TIMBERING					
	Open timbering in trenches including strutting and shoring complete (Measurements to be					

S.No.	Item Description	Unit	Quantity	Rate To be Quoted by Bidder (INR)		AMOUNT to be Quoted by Bidder (INR)
				Figures	Words	
8.4.1	taken of the face area timbered). Depth not exceeding 1.5 m. Depth from 0 m to 1.5	sqm	7167			
8.4.2	Depth beyond 1.5m to 3m	sqm	7167			
8.5	BARRICADING					
8.5.1	Providing sal ballah barricading with departmental sal ballah average 150 dia. And 2M long sal ballah post at interval of 2.5M C/C fixed 0.5 M average below ground, packed with earth and Brick bats, well watered and rammed with three rows of average 100mm dia. Sal ballah horizontal runners fixed with iron spikes and wires, white washing one coat to exposed surface, dismantling the barricade after function, filling the holes, excluding carriage of sal ballah from and to godown up to 5K.M. lead, stacking them in countable stacks in godown including cost of all labour and materials and taxes all complete job as per specification and direction of E/I.	m	7167			
8.6	Pumping out water caused by springs, tidal or river seepage, broken water mains or drains and the like.	KL	5000			
8.7	NALA CROSSING & THRUST BLOCK					

S.No.	Item Description	Unit	Quantity	Rate To be Quoted by Bidder (INR)		AMOUNT to be Quoted by Bidder (INR)
				Figures	Words	
8.7.1	Reinforced cement concrete work in wall (any thickness), including attached pilasters, buttresses, plinth and string courses, fillets, columns, pillars, piers, abutments, posts and struts, etc. up to floor five level excluding cost of centering, shuttering, finishing and reinforcement.M-20					
8.7.1.1	Nala Crossing	cum	225			
8.7.1.2	Thrust block	cum	143.34			
8.8	Reinforcement for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete. Thermo-Mechanically Treated bars TMTC-500	MT	43.37			
8.9	ROAD RESTORATION					
8.9.1	BITUMINOUS ROADS					
8.9.1.1	Water Bound Macadam: (Providing, laying, spreading and compacting stone aggregates of specific sizes to water bound macadam specification including spreading in uniform thickness, hand packing, rolling with vibratory roller 8-10 tones / Smooth 3 wheeled Steel Roller in stages to proper grade and camber, applying and brooming requisite type of screening/ binding Materials to fill up the interstices of coarse					

S.No.	Item Description	Unit	Quantity	Rate To be Quoted by Bidder (INR)		AMOUNT to be Quoted by Bidder (INR)
				Figures	Words	
	aggregate, watering and compacting to the required density). Using Screening Crushable type such as Moorum or Gravel (with Vibratory Roller)					
8.9.1.1.1	Grading II: 100 mm thick	cum	1978.23			
8.9.1.1.2	Grading III: 100 mm thick	cum	1978.23			
8.9.1.2	Prime coat (Providing and applying primer coat with bitumen emulsion on prepared surface of granular Base including clearing of road surface and spraying primer at the rate of 0.60 kg/sqm using mechanical means.)	sqm	13188.20			
8.9.1.3	Tack Coat: Providing and applying tack coat with bitumen emulsion using emulsion pressure distributor at the rate of 0.20 kg per sqm on the prepared bituminous/granular surface cleaned with mechanical broom.	sqm	13188.20			
8.9.1.4	Bituminous Macadam (Providing and laying bituminous macadam with 100-120 TPH hot mix plant producing an average output of 75 tones per hour using crushed aggregates of specified grading premixed with bituminous binder, transported to site, laid over a previously prepared surface with paver finisher to the required grade, level and alignment and rolled as per clauses 501.6 and 501.7 to achieve the desired compaction) for Grading I (40 mm	cum	527.53			

Bihar Urban Development Investment Program

Improvement of Water Supply System in Bhagalpur Municipal Corporation (BH/WS/02)

S.No.	Item Description	Unit	Quantity	Rate To be Quoted by Bidder (INR)		AMOUNT to be Quoted by Bidder (INR)
				Figures	Words	
	nominal size); thickness 40 mm					
8.9.1.5	Bituminous Penetration Macadam (Construction of penetration macadam over prepared Base by providing a layer of compacted crushed coarse aggregate using chips spreader with alternate applications of bituminous binder and key aggregates and rolling with a smooth wheeled steel roller 8-10 tone capacity to achieve the desired degree of compaction) 50 mm thick	sqm	13188.20			
8.9.1.6	20mm thick Open-Graded Premix Carpet using Bituminous (penetration grade/modified bitumen) Binder: Providing, laying and rolling of open-graded premix carpet of 20 mm thickness composed of 13.2 mm to 5.6 mm aggregates either using penetration grade bitumen or emulsion to required line, grade and level to serve as wearing course on a previously prepared base, including mixing in a suitable plant, laying and rolling with a three wheel 80-100 kN static roller capacity, finished to required level and grades to be followed by seal coat of either Type A or Type B or Type C as per Technical Specification Clause 508.	sqm	13188.20			
8.9.2	CONCRETE ROADS					
8.9.2.1	Sand Filling 100 mm in foundation trenches as per Drawing & Technical Specification.	cum	286.68			

S.No.	Item Description	Unit	Quantity	Rate To be Quoted by Bidder (INR)		AMOUNT to be Quoted by Bidder (INR)
				Figures	Words	
8.9.2.2	<p>Dry Lean Cement Concrete Sub- base (Construction of dry lean cement concrete Sub-base over a prepared sub-grade with coarse and fine aggregate conforming to IS: 383, the size of coarse aggregate not exceeding 25 mm, aggregate cement ratio not to exceed 15:1, aggregate gradation after blending to be as per table 600-1, cement content not to be less than 150 kg/ cum, optimum moisture content to be determined during trial length construction, concrete strength not to be less than 10 Mpa at 7 days, mixed in a batching plant, transported to site, laid with a paver with electronic sensor, compacting with 8-10 tones vibratory roller, finishing and curing.)</p> <p>100 mm thick</p>	cum	4285.82			
8.9.2.3	<p>Cement Concrete Pavement (Construction of un-reinforced, dowel jointed, plain cement concrete pavement over a prepared sub base with 43 grade cement @ 400 kg per cum, coarse and fine aggregate conforming to IS 383, maximum size of coarse aggregate not exceeding 25 mm, mixed in a batching and mixing plant as per approved mix design, transported to site, laid with a fixed form or slip form paver, spread, compacted and finished in a continuous operation including provision of contraction, expansion, construction and longitudinal joints, joint filler,</p>					

S.No.	Item Description	Unit	Quantity	Rate To be Quoted by Bidder (INR)		AMOUNT to be Quoted by Bidder (INR)
				Figures	Words	
	separation membrane, sealant primer, joint sealant, deboning strip, dowel bar, tie rod, admixtures as approved, curing compound, finishing to lines and grades as per drawing).					
	200 mm thick	cum	8571.64			
8.10'	MISCELLANEOUS WORK					
8.10.1	Repairing of the existing house connections of water supply damaged during execution of work including supply of material eg. G.I pipe or any suitable pipe, its fittings etc. labour T&P etc. complete to required for proper completion of the work (It is assumed in every 100 m 1 house connection will be damaged during the execution)	No.	287.00			
8.10.2	Provide cost of damaged existing water supply lines , electric and telephone cables during execution of work including supply of all labour, material T&P etc. required for proper completion of the work.	No.	60.00			
8.11	DUCTILE IRON (DI) K-9 PIPES - CLEAR WATER MAIN					
8.11.1	Providing and laying S&S Centrifugally Cast (Spun) / Ductile Iron pipe conforming to is : 8329 : including Hydraulic testing of the main in the field to the required pressure as per IS specification and Disinfecting water mains by					

Bihar Urban Development Investment Program

Improvement of Water Supply System in Bhagalpur Municipal Corporation (BH/WS/02)

S.No.	Item Description	Unit	Quantity	Rate To be Quoted by Bidder (INR)		AMOUNT to be Quoted by Bidder (INR)
				Figures	Words	
	flushing with water containing bleaching powder @ 0.5 gms per liter of water and cleaning the same with fresh water, operation to be repeated three times including getting the sample of water from the disinfected main tested in the municipal laboratory. Class K-9 pipes					
8.11.1.1	150 mm	RMT	285			
8.11.1.2	200 mm	RMT	958			
8.11.1.3	250 mm	RMT	0.00			
8.11.1.4	300 mm	RMT	1269.00			
8.11.1.5	350 mm	RMT	7933.00			
8.11.1.6	400 mm	RMT	1132			
8.11.1.7	450 mm	RMT	2615			
8.11.1.8	500 mm	RMT	361			
8.11.1.9	600 mm	RMT	1991			
8.11.1.10	700 mm	RMT	6432			
8.11.1.11	750 mm	RMT	0			
8.11.1.12	800 mm	RMT	2071			

Bihar Urban Development Investment Program

Improvement of Water Supply System in Bhagalpur Municipal Corporation (BH/WS/02)

S.No.	Item Description	Unit	Quantity	Rate To be Quoted by Bidder (INR)		AMOUNT to be Quoted by Bidder (INR)
				Figures	Words	
8.11.1.13	900 mm	RMT	3621			
8.12	DOUBLE FLANGED - DUCTILE IRON-K 9 PIPE FOR VALVE FITTING					
8.12.1	Providing and laying Double Flanged (Screwed/Welded) Centrifugally (Spun) Ductile Iron Pipes of Class K - 9 conforming to IS : 8329 : including Hydraulic testing of the main in the field to the required pressure as per IS specification and Disinfecting water mains by flushing with water containing bleaching powder @ 0.5 gms per liter of water and cleaning the same with fresh water, operation to be repeated three times including getting the sample of water from the disinfected main tested in the municipal laboratory.					
8.12.1.1	100 mm	m	115			
8.12.1.2	150 mm	m	27.5			
8.12.1.3	200 mm	m	35			
8.12.1.4	250 mm	m	0			
8.12.1.5	300 mm	m	15			
8.12.1.6	350 mm	m	85			

Bihar Urban Development Investment Program

Improvement of Water Supply System in Bhagalpur Municipal Corporation (BH/WS/02)

S.No.	Item Description	Unit	Quantity	Rate To be Quoted by Bidder (INR)		AMOUNT to be Quoted by Bidder (INR)
				Figures	Words	
8.12.1.7	400 mm	m	12.5			
8.12.1.8	450 mm	m	27.5			
8.12.1.9	500 mm	m	5			
8.12.1.10	600 mm	m	20			
8.12.1.11	700 mm	m	65			
8.12.1.12	750 mm	m	0			
8.12.1.13	800 mm	m	20			
8.12.1.14	900 mm		40			
8.13	Valves and Dismantling Joints					
8.13.1	VALVES LAYING					
8.13.1.1	Providing, lowering, laying, aligning, fixing in position in pipe line, manually operated DI D/F Sluice valves of approved make (IS: 14846 amended up to date) PN 1.0 class of following dia complete (including jointing and jointing material) including Dismantling Joints and all material, labor, testing and commissioning along with pipe line as per Technical Specifications and as per direction of Engineer. Isolation & Scour Valve					

S.No.	Item Description	Unit	Quantity	Rate To be Quoted by Bidder (INR)		AMOUNT to be Quoted by Bidder (INR)
				Figures	Words	
8.13.1.1.1	150 mm	No.	1			
8.13.1.1.2	200 mm	No.	2			
8.13.1.1.3	250 mm	No.	0			
8.13.1.1.4	300 mm	No.	3			
8.13.1.1.5	350 mm	No.	8			
8.13.1.1.6	400 mm	No.	1			
8.13.1.1.7	450 mm	No.	3			
8.13.1.1.8	500 mm	No.	0			
8.13.1.1.9	600 mm	No.	2			
8.13.1.1.10	700 mm	No.	6			
8.13.1.1.11	750 mm	No.	0			
8.13.1.1.12	800 mm	No.	2			
8.13.1.1.13	900 mm	No.	4			
8.13.1.2	Providing, lowering, laying, aligning, fixing in position D.I D/F manually operated long body butterfly valves (IS: 13095) PN-1.0 class of following dia complete (including jointing and jointing material) including Dismantling Joint and					

Bihar Urban Development Investment Program

Improvement of Water Supply System in Bhagalpur Municipal Corporation (BH/WS/02)

S.No.	Item Description	Unit	Quantity	Rate To be Quoted by Bidder (INR)		AMOUNT to be Quoted by Bidder (INR)
				Figures	Words	
	all material, labour, testing along with pipe line and commissioning as per Technical Specifications and as per direction of Engineer. Category "A"					
8.13.1.2.1	350 mm	No.	13			
8.13.1.2.2	400 mm	No.	2			
8.13.1.2.3	450 mm	No.	4			
8.13.1.2.4	500 mm	No.	1			
8.13.1.2.5	600 mm	No.	3			
8.13.1.2.6	700 mm	No.	10			
8.13.1.2.7	750 mm	No.	0			
8.13.1.2.8	800 mm	No.	3			
8.13.1.2.9	900 mm	No.	6			
8.13.1.3	Providing, lowering, laying, aligning, fixing in position and jointing in pipe line Kinetic Double Air Valves as per IS:14845 of following dia (including jointing and jointing material), including Dismantling Joint and all material, labour, testing and commissioning as per Technical Specifications and as per direction of Engineer.					

Bihar Urban Development Investment Program

Improvement of Water Supply System in Bhagalpur Municipal Corporation (BH/WS/02)

S.No.	Item Description	Unit	Quantity	Rate To be Quoted by Bidder (INR)		AMOUNT to be Quoted by Bidder (INR)
				Figures	Words	
8.13.1.3.1	50 mm	No.	8			
8.13.1.3.2	80 mm	No.	10			
8.13.1.3.3	100 mm	No.	5			
8.13.1.3.4	150 mm	No.	5			
8.13.1.3.5	200 mm	No.	5			
8.14	SPECIALS					
8.14.1	Ductile Iron K - 12 specials suitable for push on jointing and Laying in position S&S or flanged C.I. special such as tees, bends, collars, tapers and caps etc.(including cost of specials) up to 600 mm dia	Qtl	107.2			
8.14.2	Ductile Iron K - 12 specials suitable for push on jointing and Laying in position S&S or flanged C.I. special such as tees, bends, collars, tapers and caps etc.(including cost of specials) over 600 mm dia	Qtl	115.98			
8.15	Constructing Masonry Chamber in cement mortar 1:4 (1 cement : 4 coarse sand) for sluice valve, with C.I. surface box 100 mm top diameter, 160 mm bottom diameter and 180 mm deep (inside) with chained lid and RCC top slab M 30 Grade concrete , including necessary excavation,					

S.No.	Item Description	Unit	Quantity	Rate To be Quoted by Bidder (INR)		AMOUNT to be Quoted by Bidder (INR)
				Figures	Words	
	RCC foundation over cement concrete 1:4:8 (1 cement : 4 fine sand : 8 graded stone aggregate 40 mm nominal size) as per drawing and 12 mm inside plastering with cement mortar 1:3 (1 cement : 3 coarse sand) 12 mm thick, finished with a floating coat of neat cement complete as per standard design With common burnt clay F.P.S. (non modular) bricks of class designation 100A all complete as per drawing, technical specification and direction of Engineer-In-Charge.					
8.15.1	900x1000x1400 mm size valve chamber suitable for 100-200 mm dia Valves	No.	36			
8.15.2	1000x1200x1500 mm size valve chamber suitable for 250-300 mm dia Valves	No.	3			
8.15.3	1550x1500x1750 mm size valve chamber suitable for 350-450 mm dia Valves	No.	31			
8.15.4	1650x1700x1900 mm size valve chamber suitable for 500-700 mm dia Valves:	No.	22			
8.15.5	2000x2250x2400 mm size valve chamber suitable for 800-900 mm dia valves	No.	15			
Subtotal for Schedule No.08				In Figures		
				In Words		

Bihar Urban Development Investment Program

Improvement of Water Supply System in Bhagalpur Municipal Corporation (BH/WS/02)

PRICE PROPOSALS - PART C: OPERATIONS SERVICE

Name of Project	Bihar Urban Development Investment Program – Tranche 2 (ADB Loan: Applied for / Project No. IND-41603-023)
Name of Employer:	Bihar Urban Infrastructure Development Corporation Limited (BUIDCo)
Contract Title:	Improvement of Water Supply System in Bhagalpur Municipal Corporation (BWSP 02)
Contract Package No:	BH/WS/02
Bidder's Name :	
Schedule No. 09: OPERATION AND MAINTENANCE OF WATER SUPPLY SYSTEM	

S.No.	Item Description	Unit	Quantity	Rate To be Quoted by Bidder (INR)		AMOUNT to be Quoted by Bidder (INR)
				Figures	Words	
09	Operation and Maintenance of Water Supply System					
9.1	Operations, Maintenance and Management of Water Supply and all related infrastructure for approximate average production and supply to the reservoirs according to the projected water requirement for each year as mentioned in Technical specification for 10 years at Barari Water Works comprising of proposed intake well, Jackwell, raw water pumping system, Settled water pumping system and Full scale treatment Plant disposal of dehydrated sludge cakes , treated water pumping system up to the Service Reservoirs , water quality testing and monitoring, flow and pressure measurement including all necessary preventive and reactive maintenance of all civil, mechanical, electrical					

Bihar Urban Development Investment Program

Improvement of Water Supply System in Bhagalpur Municipal Corporation (BH/WS/02)

S.No.	Item Description	Unit	Quantity	Rate To be Quoted by Bidder (INR)		AMOUNT to be Quoted by Bidder (INR)
				Figures	Words	
	and instrumentation units, SCADA System, administration, transport, communications, management information systems, reporting, including cost of all wages, chemicals, consumables, administration, transport, spares, insurance, taxes levies etc., complete for producing and supplying potable water conforming to the relevant CPHEEO Standards but excluding cost of electricity charges . The quantity shall be measured at the inlet of the Service Reservoirs for payment.					
9.1.1	Operation and maintenance of 1 st year (minimum 60 MLD)	ML	21,900			
9.1.2	Operation and maintenance of 2 nd year (minimum 63 MLD)	ML	22,995			
9.1.3	Operation and maintenance of 3 rd year (minimum 66 MLD)	ML	24,090			
9.1.4	Operation and maintenance of 4 th year (minimum 69 MLD)	ML	25,185			
9.1.5	Operation and maintenance of 5 th year (minimum 72 MLD)	ML	26,280			
9.1.6	Operation and maintenance of 6 th year (minimum 75 MLD)	ML	27,375			
9.1.7	Operation and maintenance of 7 th year	ML	28,470			

Bihar Urban Development Investment Program

Improvement of Water Supply System in Bhagalpur Municipal Corporation (BH/WS/02)

S.No.	Item Description	Unit	Quantity	Rate To be Quoted by Bidder (INR)		AMOUNT to be Quoted by Bidder (INR)
				Figures	Words	
9.1.8	(minimum 78 MLD) Operation and maintenance of 8 th year (minimum 81 MLD)	ML	29,565			
9.1.9	Operation and maintenance of 9 th year (minimum 84 MLD)	ML	30,660			
9.1.10	Operation and maintenance of 10 th year (minimum 87 MLD)	ML	31,755			
Subtotal for Schedule No. 9		In Figures				
		In Words				

Note: The Bidder shall separately provide a break-up of salaries, wages, consumables, maintenance for civil, mechanical, electrical and instrumentation, training of BMC staff, administration, management, insurance and all other costs such as establishment and operation of offices in a separate sheet for analysis by the Employer

PRICE PROPOSALS - PART D: PROVISIONAL SUM
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Name of Project	Bihar Urban Development Investment Program – Tranche 2 (ADB Loan: Applied for / Project No. IND-41603-023)
Name of Employer:	Bihar Urban Infrastructure Development Corporation Limited (BUIDCo)
Contract Title:	Improvement of Water Supply System in Bhagalpur Municipal Corporation (BWSP 02)
Contract Package No:	BH/WS/02
Bidder's Name :	
Schedule No. 10: PROVISIONAL SUM	

S.No.	Item Description	Unit	Quantity	Rate To be Quoted by Bidder (INR)		AMOUNT to be Quoted by Bidder (INR)
				Figures	Words	
10	Provisional Sum	-	LS	Not to be quoted		
	Subtotal for Schedule No. 10	In Figures		50,000,000		
		In Words		Fifty million only		

Section 5 - Eligible Countries

This Section contains the list of eligible countries.

1.	AFG	Afghanistan	36	MON	Mongolia
2.	ARM	Armenia	37.	MYA	Myanmar
3.	AUS	Australia	38.	NAU	Nauru
4.	AUT	Austria	39.	NEP	Nepal
5.	AZE	Azerbaijan	40.	NET	The Netherlands
6.	BAN	Bangladesh	41.	NZL	New Zealand
7.	BEL	Belgium	42.	NOR	Norway
8.	BHU	Bhutan	43.	PAK	Pakistan
9.	BRU	Brunei Darussalam	44.	PAL	Palau
10.	CAM	Cambodia	45	PNG	Papua New Guinea
11.	CAN	Canada	46.	PHI	Philippines
12.	PRC	China, People's Republic of	47.	POR	Portugal
13.	COO	Cook Islands	48.	SAM	Samoa
14.	DEN	Denmark	49.	SIN	Singapore
15.	FIJ	Fiji	50.	SOL	Solomon Islands
16.	FIN	Finland	51.	SPA	Spain
17.	FRA	France	52.	SRI	Sri Lanka
18.	GER	Georgia	53.	SWE	Sweden
19.	GEO	Germany	54	SWI	Switzerland
20.	HKG	Hong Kong, China	55.	TAJ	Tajikistan
21.	IND	India	56.	TAP	Taipei, China
22.	INO	Indonesia	57.	THA	Thailand
23.	IRE	Ireland	58.	TIM	Timor-Leste
24.	ITA	Italy	59.	TON	Tonga
25.	JPN	Japan	60.	TUR	Turkey
26.	KAZ	Kazakhstan	61.	TKM	Turkmenistan
27.	KIR	Kiribati	62.	TUV	Tuvalu
28.	KOR	Korea, Republic of	63.	UKG	United Kingdom
29.	KGZ	Kyrgyz Republic	64.	USA	United States
30.	LAO	Lao PDR	65.	UZB	Uzbekistan
31.	LUX	Luxembourg	66.	VAN	Vanuatu
32.	MAL	Malaysia	67.	VIE	Viet Nam
33.	MLD	Maldives			
34.	RMI	Marshall Islands			
35.	FSM	Micronesia, Federal States of			

Bihar Urban Development Investment Program - Tranche 2

(ADB Loan /Project No41603-IND)

BIDDING DOCUMENT

For

Procurement

Of

Improvement of Water Supply System in Bhagalpur Municipal Corporation

(BWSP 02)

(Following ADB's Single Stage Two Envelope Bidding Procedure)

Section 6: Employer's Requirement

Issued on: **March** 2018

Invitation for Bids No.: **BUIDCo/BUDIP-2/NCB/02**

NCB No.: **BH/WS/02**

Employer: **Bihar Urban Infrastructure Development Corporation Ltd, Govt. of Bihar**

Country: **India**

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1. INTRODUCTION

1.1 PREAMBLE

1. The overall objective of the Bhagalpur Water Supply Project (BWSP) is to deliver a continuous, pressurized supply of safe water to the entire population of Bhagalpur town. BWSP will be executed in two packages (and under two separate contracts) under the Bihar Urban Development Investment Program (BUDIP)¹. The Scope of Services under Package 1, Improvement of Water Supply in Bhagalpur (BWSP1), Rehabilitation of 3 existing water treatment plant, construction of new overhead storage tanks, Construction of 33KV sub stations, construction of distribution pipelines and providing all authorized connections with water meters, as well as the operation, maintenance and management of the entire water supply system except for the works constructed under Package 2.
2. Package 2 will provide new water source works, water treatment plant and transmission mains for the supply of Bulk Water to the Bhagalpur water distribution system. The construction periods of Packages 1 and 2 are expected to be coterminous, such that bulk water extracted from the new water source works under Package 2 will be supplied to the water supply system developed under Package 1
3. The specific objectives of BWSP package 2 are:
 - Creation of new water sources by constructing Intake well on the Bank of Ganga River for catering the needs of Bhagalpur Town for the year 2047 requirements.
 - Treatment of water as per the standard of CHHEEO manual
 - Efficient supply of water both with respect to the quantities of water supplied as well as the energy used for water supply from the newly created water sources to all the storage reservoirs.
 - Efficient transmission of water to the Service area. Through overhead tank
 - A reliable supply of good quality drinking water compliant with Indian water quality standards
4. Making available bulk water at Service Reservoirs as per demand to be notified by the Employers Representative or BMC on daily basis in a sustained manner to achieve 24x7 water supply to all consumers in BMC area The Scope of Services described hereunder in Chapter 2 is indicative and may not be exhaustive or complete. The Contractor shall undertake its own detailed investigation and verification of the Project Facilities.
5. The Scope of Services shall include all technical, managerial, administrative, commercial, environmental, and social interventions as required in accordance with acceptable, prudent water utility construction and management practices, ensuring safe and sustainable drinking water supply services to the Consumers in the Service Area.

1.2 DEFINITIONS

6. The words, terms and expressions beginning with capital letters and defined under this Section 6, Chapter 1.2 including those in Section 7 - General Conditions of Contract and those in Section 8 – Particular Conditions of Contract shall, unless the context otherwise requires, have the meanings ascribed thereto/herein;
 - 6.1. "Boundary Limits" shall mean the boundary within which the Contractor has the responsibility of providing Services in accordance to the terms and conditions under this Contract;
 - 6.2. "BUDIP" means Bihar Urban Development Investment Program;
 - 6.3. "BUIDCo" means Bihar Urban Infrastructure Development Corporation Limited;
 - 6.4. "Bulk Water" means the treated bulk water supplied by the Employer through contract BWSP Package 2 to specific supply points;
 - 6.5. "Consumer" or "Customer" means all entities (including individuals) to which/whom BMC provides water services through the existing water distribution system and will supply through the newly developed system and includes all existing customers at the time of the Commencement Date and entities which become customers after the Commencement Date;
 - 6.6. "Construction Completion Date" is the date when all construction works have been completed and taken over by employer.
 - 6.7. "Construction Plan" means the Contractor's Plan for implementation of construction works.
 - 6.8. "CPHEEO" means the Central Public Health and Environmental Engineering Organization under the Ministry of Urban Development, Government of India;
 - 6.9. "Critical Measurement Points" shall mean the locations as agreed by the Employer in the Construction Plan and also as added during the term of the Contract for undertaking measurement of flow and pressure in the water supply system for facilitating the monitoring of Minimum Service Levels stipulated in Chapter 3 – Performance Standards of this Section 6;
 - 6.10. "DPR" means the Detailed Project Report of Bhagalpur Water Supply Project (BWSP II) prepared and approved by the Employer;
 - 6.11. "Design and Supervision Consultant" or "DSC", the agency appointed by the Employer to provide design and construction supervision services under a separate Contract;
 - 6.12. "Electricity Department" means the local service provider supplying electrical energy for operation service of the facilities;
 - 6.13. "Existing Assets" means those infrastructure components, plant, machinery, equipment and any other units existing in the Service Area as on the Commencement Date;

- 6.14. "Minimum Service Levels: means the levels of service to be maintained in the operations, maintenance and management and service delivery to consumers more so described in Chapter 3 – Performance Standards in this Section 6;
- 6.15. "New Assets" means those infrastructure components, plant, machinery, equipment and any other units procured, supplied, installed, erected and commissioned by the Contractor during the Contract Period other than those existing on the Commencement Date;
- 6.16. "Operation and Maintenance Plan" means the plan for operating and maintaining the water supply system, submitted by the Contractor, and agreed by the Employers Representative
- 6.17. "Performance Related Payment" means payment to the Contractor based upon achievement of Performance Standards.
- 6.18. "Performance Standards" mean the Minimum Service Levels to be achieved and maintained by the Contractor during each period of the Contract as set forth in Chapter 3 – Performance Standards in this Section 6;
- 6.19. "Potable Water Specification" means the water quality requirements of potable water to be supplied to the Consumers as stipulated in Table 2.2 Recommended Guidelines for Physical and Chemical Parameters and Table 2.3 Bacteriological Quality of Drinking Water, in the Manual on Water Supply and Treatment, CPHEEO, Government of India, Ministry of Urban Development, New Delhi;
- 6.20. "Preparation Phase" is the period between the Commencement Date and the date the Contractor takes over operations of the entire water supply system from the BMC;
- 6.21. "Project Facilities" or "Facilities" means all existing and proposed infrastructure facilities including open lands, buildings, structures, plant, machinery, and equipment under BWSP;
- 6.22. "Project Information Memorandum" or "PIM" shall mean the reports prepared by the Employer detailing the Project as provided in Chapter 6 - Supplementary Information and available at the e-data room set up by the Employer;
- 6.23. "Program Management Consultant" or "PMC" means the agency appointed by the Employer to provide project management advisory services to the Employer under a separate contract;
- 6.24. "PHED" means Public Health Engineering Department of the Government of Bihar;
- 6.25. "PRV" means Pressure Reducing Valve;
- 6.26. "Scope of Services" shall mean all those services to be provided by the Contractor in accordance to the obligations, activities, responsibilities and tasks in implementing the Project to achieve the Minimum Service Levels in accordance to the Chapter 3– Performance Standards;

- 6.27. "Services" means all those activities, interventions, actions and tasks required as part of the implementation of BWSP II including all planning, design, verification of detailed engineering design, procurement, construction, operations, maintenance, in providing continuous pressurized water supply to the Bhagalpur
- 6.28. "Service Area" means the area covered by the current BMC administrative municipal boundaries;
- 6.29. "Supply Points" means the points where the Employer will supply Bulk Water to the Contractor;

2. SCOPE OF SERVICES

2.1 IMPLEMENTATION SCHEDULE

2.1.1 COMPONENTS AND PHASING OF THE PROJECT

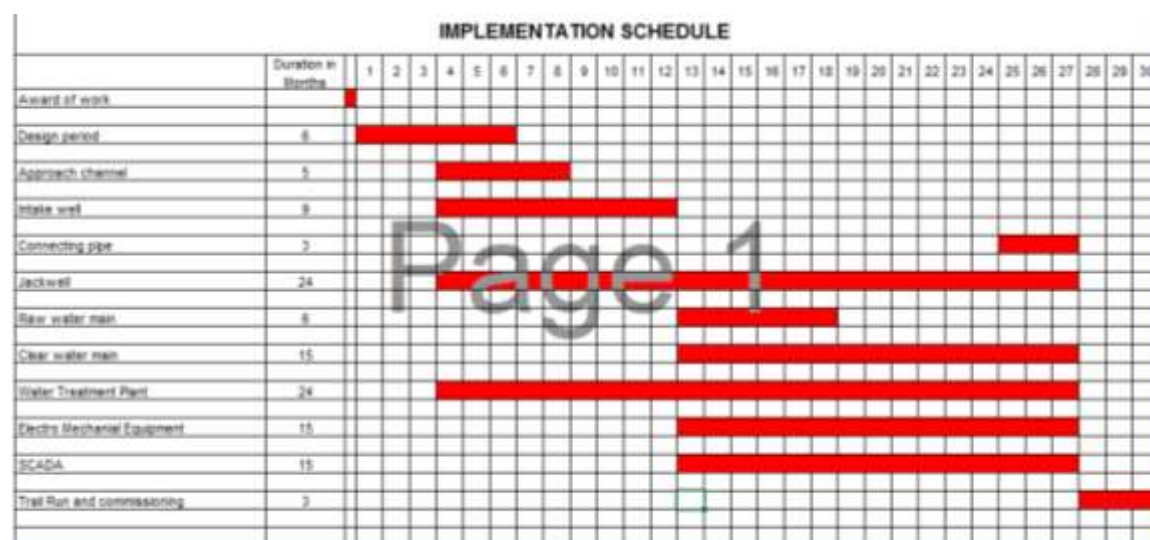
7. The Contract consists of three parts:
- (i) Preparatory part consisting designs by contractor and approvals by the Employer's Representative
 - (ii) Construction Works
 - (iii) Operations, including Operation Services
- 7.1. The **Preparatory** part consists of 1 sub-parts or Sections:
- Section 1: Investigation and Design works
- 7.2. The **Construction Works** part consists of 3 sub-parts or Sections:
- Section 2: Intake works & Raw Water Main and ancillary
 - Section 3: WTP including CWR and electrical sub stations
 - Section 5. Clear water pump House and Transmission main
- 7.3. The **Operation** Services part consists of 3 subparts:
- Section 6: Operation of the intake works including electrical sub-station and maintenance of dredging channel
 - Section 7 Operation of Water Treatment Plant
 - Section 8: Operation of transmission mains and SCADA
8. Three parallel phases in project implementation are distinguished:
- 8.1. Phase 1 – **Preparatory Phase** will take 6 months and will include
- Field Investigation
 - Design of Intake Jack well, WTP shall be completed within initial 3 months and design of ancillary works, Electro Mechanical and SCADA etc shall be completed within 6 months period.

8.2. Phase 2 – **Construction Phase** will take off from 4th months onwards and will be upto 30 months

.Phase 3 – **Operation of Assets created and it is of** 120 months

8.3. Figure 2.1.1 summarizes the phasing of project implementation graphically.

Figure 2.1.1 schematization of project implementation



2.1.2 CONTRACT KEY DATES

9. The following key dates govern the terms of the Contract:
 - 9.1. The Commencement Date shall be as per General Conditions of Contract, Clause 8.1 [*Commencement of Works*].
 - 9.2. Preparatory works shall start at the Commencement Date;
 - 9.3. Section 1 shall be completed within 6 months from the commencement date
 - 9.4. Works shall start at the completion of preparatory works i.e 4th month from the Commencement Date;
 - 9.5. The Construction Completion Date shall be the date **30months** from the Commencement Date when all Works shall be finalized with the following provisions:
 - Section 2 shall be completed within 27 months from the Commencement Date;
 - Section 3 shall be completed within 27 months from the Commencement Date;
 - Section 4 shall be completed within 27 months from the Commencement Date;

- Trialrun shall be completed within 30 months from the commencement Date.

9.6. The Operations Commencement Date shall be the date 31st month from the Commencement Date, from which date the Contractor shall be responsible for operations and maintenance of the entire water supply system;

9.7. The Contract Completion Date shall be **150months** from the Commencement Date.

2.1.3 CONTRACT MILE STONE

S No	Components	1 st year Milestone (1-12 months)	2 nd year cumulative Milestone (13 to 24 month)	3 rd year cumulative milestone (25 to 30 months)
1	Design of all the components (0 to 6th month)	100%		
2	Approach Channel (4th to 7th month)	100%		
3	Intake works (4 th to 12 th month)	100%		
4	Connecting pipe between intake and Jack well (25 th to 27 th month)			100%
5	Jack well (4 th to 27 th month)	25%	75%	100%
6	Raw water main (13 th to 16 th month)		100%	
7	Clear water main (13 th to 27 th month)		50%	100%
8	WTP (4 th to 27 th month)	25%	60%	100%
9	Electro Mechanical equipment (13 th to 27 th month)		50%	100%
10	SCADA and Automation (13 th to 27 th month)		25%	100%

2.2 BOUNDARY LIMITS

10. The Boundary Limits for undertaking planning, verification of drawing, construction, operations, maintenance and management by the Contractor, include the entire water supply chain starting from Creating new source in River Ganga by providing Approach channel in River Ganga, Intake well , Connecting pipe from intake well to Jack well, Raw water main, Water Treatment plant and Clear water mains to the Reservoirs in the Bhagalpur Town
11. Facilities to be constructed and operated under package 1 are not included in the Contractor's Scope of Services.
12. The project area is within the existing jurisdiction of Bhagalpur Municipal Corporation. In case the jurisdiction, during the course of the Contract, is extended beyond the existing boundary limits, then it shall not be the responsibility of the Contractor to provide water services to these extension areas.

2.3 PREPARATION ACTIVITIES

13. The Contractor shall establish contact with all relevant stakeholders, including consultants under the Bihar Urban Development Investment Program (BUDIP), and become familiar with the Bhagalpur water supply system, and the applicable standards and guidelines for water supply design, and with past and current on-going works in the Service Area.
14. The Contractor shall read, familiarize itself with and understand the relevant institutional arrangements and governing laws to determine in detail which roles the Bhagalpur Municipal Corporation (BMC), as the asset holding and operating entity play or intends to play.
15. The Contractor shall satisfy itself to the nature and scope of work and the prevailing site conditions.
16. The Contractor shall liaise with the BMC, the local traffic police and other Government Agencies regarding governing laws and regulations in order to undertake studies and construction activities under the Contract such as:
 - Environmental and social impact assessments and prevention, mitigation and monitoring of impacts during construction;
 - Compensation for damages to property;
 - Occupational health and safety including workers compensation;
 - Consultation of beneficiary populations; and
 - Signage for construction works.
17. There are several other water supply related works on-going or have been recently been completed by BMC, Public Health Engineering Department (PHED) or Bihar Urban Infrastructure Development Corporation (BUIDCo). The Contractor shall review all the reports and ensure that the Construction Plan, the Operation and

Maintenance Plan and the to be prepared by the Contractor do not duplicate any measure already financed and implemented, or proposed to be implemented under contract package 2. The Contractor shall also ensure that investments proposed as part of the Construction Plan are well coordinated and scheduled so that it can be adequately implemented, constructed, managed, supervised, monitored and finally be evaluated in terms of its impact. However, these investments shall be complimentary to the outcomes of the previous or other ongoing interventions.

18. The Contractor shall acquaint himself the Detailed Project Report (DPR) that have been prepared for the project in order to obtain a good understanding of the background of the projects.
19. The Contractor will prepare three Plans, of which the details of their contents are specified in Paragraph 2.8[*Reporting*]:
 - Construction Plan describing implementation of all Works Sections and with emphasis on the time sequence followed for the implementation and completion of Works in the different Sections, taking into account the water production, storage and supply chains formed by the various Sections of Works;
 - Operation and Maintenance Plan, describing all water supply operations and maintenance services to be provided by the Contractor;
20. A preliminary draft of the Construction Plan shall be submitted by the Contractor with the detailed time program as required under the Section 7 [*General Conditions of Contract*], Clause 8.3 [*Programme*] in sufficient detail to support the detailed time programme.
21. The construction plan shall be submitted by the contractor to the Engineer before two month from the commencement date for review and comments by the Employer and has to be approved within three month from the commencement date. The operation and maintenance plan shall be submitted by the contractor within 27 months from the commencement date and it has to be approved within 30 months from the commencement date.

2.4 TYPES OF OFFICE SPACE TO BE PROVIDED:

22. For all Works-related Services: The Contractor shall make its own arrangements for renting and acquiring sufficient land for erection of its own offices, facilities, as required, for carrying out test at site and of stores plus parking / maintenance area for vehicles and equipment to be used for the Works at its own expenses. It shall include provisions for the Employers Representative as further detailed in the Technical Specifications.
23. For the Operation Services: The Employer shall make its own arrangements for renting office facilities to accommodate the Contractor's operation staff and of staff delegated to the Contractor.. The Contractor shall provide office furniture and equipment as required by their own cost. The cost of operations maintenance of the office shall be included in the Contractor's Operation fees.

The Contractor shall avail of existing facilities at the Barari waterworks compound for its stores, workshop, and laboratory requirements during Operations.

2.5 TECHNICAL STANDARDS AND REGULATION TO BE FOLLOWED

24. Except where otherwise specified plant, materials and workmanship shall comply with the requirements of the relevant Indian Standards (herein after referred to as IS) issued by the Bureau of Indian standards. Other equivalent National or International Standard Specifications such as those issued by the International Organization for Standardization (ISO) or the International Electro technical commission (IEC) may be submitted by the Contractor (so long as they are more stringent than the equivalent IS) at the sole discretion of the Employers representative or as may have been agreed in the Contract. All Standards used shall be the current version.
25. The electricity installation shall comply with all relevant statutory regulations and standards current at date bids, unless otherwise indicated within the Employers Requirement. Electrical installations shall where relevant be in accordance with the Indian Standards Code of Practice for Electrical Wiring Installations IS 732.
26. All materials and workmanship not fully specified herein or covered by an approved standard shall be of such kind as is used in first class work and suitable to the climate in the Project area.
27. Where the requirement of any such standard specification or regulation conflict with the requirements of the Employer's Requirements or any item on the Drawings, then the contractor should refer to the Employers representative for clarification before proceeding with that section of the works.
28. If Relevant BIS standards are not available then at the discretion of the Employer's Representative, Contractors will be allowed to use international standards such as AWWA/DIN/JIS/BS.
29. Ministry of Road Transport & Highway (MORTH), Government of India Specifications for Roads and bridge works and relevant IRC specification should be allowed for the relevant items.

2.6 SUBMITTAL & SAMPLE OF MATERIALS

30. Vendors, suppliers of all construction materials including samples, test reports of samples required to be submitted for approval. Samples of materials requiring prior approval, such as cement, aggregates, asphalt cement building specialties, and backfill materials, in large enough quantities (at least 0.1 m³ each) with descriptive data shall be furnished by the Contractor to the Employer's Representative. Samples shall be properly marked to show the name of the material, name of the manufacturer, applicable Specification.
31. Only upon approval by the Employer's Representative, the materials shall be brought to site. Samples once approved shall be on exhibition at all times, properly stored and prevented from deterioration for the purpose of comparison with the materials brought to site of work from time for use in the work.

2.7 TRIAL RUN OF THE SYSTEM

32. After execution of the works, the Contractor shall make trial runs of the individual components. A continuous operation of each component for a period of 15 days, to the satisfaction of the Employer's Representative will be deemed to demonstrate satisfactory completion of the trial run for that individual component. The cost of electricity, chemicals and other consumables for operation and maintenance of the system during the period of this run will be borne by the contractor. The costs are associated for the Contractor's and other operating non Employer personal during the period of the trial run, along with costs of tools and spare parts, which are required for operation and maintenance of the plant and equipment during the trial run period shall also be borne by the contractor and shall be included in the contract Price.
33. In the event that any system or facilities do not satisfactorily achieve the required performance standards during the period, the trial run period shall be extended until such time as the contractor has satisfactorily rectified any deficiencies as may be necessary to satisfy the performance requirements, at the risk and cost to the contractor.

2.8 COMMISSIONING OF THE SYSTEM

34. On completion of the trial run, commissioning of the system shall be performed by the contractor. The total time allotted for commissioning over (i.e., running of entire plant at optimum efficient) shall be of 15 days minimum, before the system is deemed ready for commissioning. The commissioning of any system shall be considered as fully achieved after the entire system has run continuously for a period of 15 days without any breakdown to the satisfaction of the employer's representative. If a continuous run is not achieved fully to the satisfaction of Employer's representative, the contractor has to complete the required repair and modifications required to achieve the same at his cost. All the cost thereof, including the cost of contractor's personnel, maintenance, and any consumables for operation and maintenance of the system during the pre- handing over period shall be borne by the contractor.

2.9 HANDING OVER FOR MAINTAINENCE

35. On completion of commissioning, the system will be handed over to the employer when completion certificate will be issued. Then again the system shall be handed over to the contractor for maintenance period of 10 years. All the cost of personnel, maintenance, and other consumables for operation and maintenance of the system, except for the electricity consumed shall be borne by contractor. The cost of electricity will be borne by employer/BMC. From this date of completion certificate the period of 10 year for O&M of the system will start. The defect liability period of 365 days start from the date of issue of taking over certificate.

2.10 OPERATION AND MAINTENANCE

36. The Contractor shall be responsible for operation and Maintenance of the system as per part of the contract, along with spares as on required basis for the period of 10 years from the date of commissioning. Notwithstanding the above, the

Contractor shall be required to rectify any deficiencies which are attributable to defects in the workmanship or quality of materials, plant or equipment during the contract period. The list of spares required for further 10 years as per manufacturers specification shall be provided by the Contractor.

37. The schedule from trial run to operation and Maintenance

- Time limit for completion of works : 27 months
- Trial run : 45 days after completion of works
- Pre-handing over : 45 days after completion of works
- Handing over : After completion of pre handing
over date
- Defect liability period : 1 After issue of taking over
certificate
- Operation and Maintenance : From the date of handing
over of this contract till the 10 years

The 1 year defect notice period is included in Operation service period.

38. As Built drawing the Contractor shall submit the as built drawings as per instruction of Employers representative. The drawings shall be in 3 (Three) sets of hard copy (including one copy of reproducible tracings) and 1 one electronic copy.

2.11 QUALITY ASSURANCE

39. The Contractor shall prepare a detailed plan for this contract for Quality Assurance and Quality Control and have it be approved by the Employer's Representative. The contractor shall deploy an adequate number of suitable staff whose sole responsibility shall be to strictly implement QA/QC plan and conduct necessary tests to ensure the highest quality standards are being met. All other measures that the contractor may feel necessary or as may be directed by the Employer's representative shall also to be followed.

2.12 PRE- SHIPMENT INSPECTIONS OUTSIDE THE EMPLOYER'S STATE

40. In the event of contractor proposes to procure material which requires pre-shipment (factory) inspection by the Employers Representative from outside of the Employers State (Bihar), the contractor shall arrange and provide for the cost of travel to the Manufactures site , including accommodation, local transport and food for two (2) Representative of the Employer. Such costs will be incorporated into the tendered cost of such items and no additional payments will be made afterwards.

2.13 SAFETY ASSURANCE

41. The Contractor will take all measures required to maintain the highest industry recognized safety standards on the project site. The measures taken shall include all but not limited to the relevant provisions of the Indian Standards (IS). The Contractor shall prepare a Safety Plan for the Project and have it approved by the Employer's Representative prior to starting works. The Contractor shall deploy a Safety Officer on each work site to ensure compliance with the Safety Plan.

42. The Contractor shall be responsible for the safety of all workmen and other person entering or in the work area and shall take all measures necessary to ensure their safety at his own expense.

2.14FIRST-AID

43. The Contractor shall arrange for medical services to be promptly available when necessary. The Contractor shall provide first – Aid stations at Intake & WTP locations within easy reach of the workmen and other staff engaged in the work. Each First-Aid shall be properly equipped and shall be the charge of a suitable qualified supervisory staff member. The contractor shall also provide necessary conveyance for of serious case to the nearest hospital and has to take care of the persons till completely cured. All these arrangements shall be included in the contractor's safety Plan

2.15FIRE FIGHTING

44. The Contractor shall provide a suitable method for firefighting. He shall provide a suitable number of fire extinguishers, axes, shovels, pry bars and adequate numbers of buckets, some of which are always to be filled with sand some with water. This equipment shall be provided at suitable prominent and easily accessible locations as identified in the Contractors safety Plan and shall be properly maintained.

2.16PROGRESS RECORD

45. Contractor should maintain the progress record of the work in the form of photograph and video films periodically and especially during the important activities such as piling, foundations , major and important concreting, sinking operation of well, hydraulic testing of the pipe line and visits by VIPs and inspecting authorities. Copies of such recordings should be submitted to the Employer cost of this shall include in the offer.

2.17OPERATION AND MAINTENANCE MANUALS

46. The Contractor, before commencement of the Tests on Completion , shall submit six copies of the operation and maintenance (O&M) Manuals for Intake and raw water pumping station, Raw water pumping main , water treatment Plant, Pumping equipment, power supply systems including overhead lines and pump stations in the English language . Each O&M Manual shall contain descriptions, illustrations, sketches, layout drawings, sectional drawings, sectional arrangement views and manufacture's spare parts numbers to enable the connections, functioning, operation and maintenance of all components.
47. The operation and Maintenance Manual shall include the following
- a) Technical data of all equipment and their performance
 - b) Instructions for servicing and overhauling
 - c) Particulars of lubricating oil and grease to be used, and also alternative indigenous commercial lubricating oils suitable for use.

- d) Performance curves for all units regarding efficiency loading and output
- e) Performance curves for all units regarding efficiency loading and output
- f) List of tools mounted on wall panels
- g) List of spares provided in the spare box
- h) Spare parts list, with manufacture's part numbers
- i) Operator's log
- j) List of the photographs of the plant and machinery as fabricated by manufactures
- k) Procedure for maintenance
- l) Preventive maintenance procedure for all the equipment
- m) Emergency maintenance management of the Plant and equipment
- n) Addresses and contact numbers of the nearest dealers
- o) Routine periodical maintenance schedule

Contractor shall submit the O&M manual 3 months prior to the commissioning of the system

2.18 FINAL HANDING OVER THE SYSTEM TO THE EMPLOYER

48. The complete system shall be handed over by the Contractor to the Employer at the end of the O & M period. The system has to be handed over with all equipment and systems in a properly maintained and fully functional condition. The contractor will make a full inventory of items of installations and hand over, including new replacements for any spare parts or tools that were procured under the contract and used/ consumed by the contractor during O & M period. All replacement spares shall be Manufacturer's original equipment o

3. ENVIRONMENTAL AND SOCIAL SAFEGUARDS

49. The Contractor shall be fully cognizant with the Initial Environmental Examination (IEE), the Environmental Management Plan (EMP) and the Resettlement Plan (RP) for the project, contained in Annex 1 and 2. In implementation of its Services, the Contractor shall adhere strictly to all requirements in the EMP and RP.
50. Upon design and preparation of the drawing for Sections of Works and shall be verified by the employer, and if any design changes occur, the Contractor will in close consultation with the Employer's Safeguard Officer, update the EMP and RP for the Project,, to reflect the changes, submit the updated IEE/EMP and RP to the Employer for review and submission to ADB. If there are any changes in the proposed pipeline routes, the Contractor will carry out detailed census surveys along proposed pipeline routes to identify the persons affected by the Works. The Contractor shall not commence any works in the concerned Sections of Works until the final approval of the IEE/EMP,RP is obtained from ADB and fully implemented by employer. No work on the new water treatment plant will commence prior to

obtaining the consent to establish (CTE) from Bihar state Pollution Control Board. In case of temporary or permanent resettlement of affected persons from Work sites, the Employer will be responsible for the effectuation and the cost of compensation entitlements of affected persons, in accordance with the approved entitlement matrix for BUIDP the contractor to. Ensure international good practices for backfilling and dewatering during construction phase. The provision for such works is made in BOQ.

51. Site Environmental Plan
52. The contractor shall prepare a detailed site Environmental plan (SEP) for the works site, base camp, etc showing arrangements for disposal of sanitary and other waste, location of fuel, oil and lubricant depots, sheds for equipment, labour and housing facilities etc prior to the construction for approval of the Engineer.
53. Protection of Trees and Vegetation
54. The contractor shall ensure that no trees or shrubs or waterside vegetation are felled or harmed except for those required to be cleared for execution of the works. The contractor shall protect trees and vegetation from damage to the satisfaction of the Engineer. No trees shall be removed without the prior approval of the Engineer and any competent authorities. Should the contractor become aware during the period of the contract that any tree or trees designated for clearance have cultural or religious significance he shall immediately inform the Engineer and await his instructions before proceeding with clearance. In the event that trees or other vegetation not designated for clearance are damaged or destroyed, they shall be repaired or replaced to the satisfaction of the Engineer, who shall impose a penalty to twice the commercial value of any timber affected, as assessed by the Engineer.
55. Use of wood as Fuel
56. The contractor shall not use wood as a fuel for the execution of any part of the works, including but not limited to the heating of bitumen and bitumen mixtures and the manufacture of bricks for use in the works, and to the extent practicable shall ensure that fuels other than wood are used for cooking and water heating in all his camps and living accommodations.
57. Housing for Labour
58. The contractor at his own expense shall provide and maintain, in a clean and sanitary condition, living accommodations for those employed by him on the project. Each building for living accommodations shall be provided with lights, water supply, and sanitary facilities and be properly furnished.
59. No disposal shall be allowed into the river..
60. Back wash water should be reused and finally disposed in the cake form at the selected site
61. Sludge will be disposed in the cake form at the selected site.
62. Disposal of land shall be provided by the BMC.

4. GENERAL DESCRIPTION OF WORKS

63. Scope of work includes design, supply, construction, erection/installation of electro-mechanical & instrumentation (up to SCADA), trial run and commissioning, operation and maintenance (10 years) for raw water intake and pumping station, raw water pumping main, 90MLD water treatment plant with all units and clear water pumping station, electrical sub stations, riverbank protection work, transmission network for entire Bhagalpur City and associated works. For Raw water main and Clear water rising main, design shall be provided by the employer. However the design of road crossings, culvert crossings, Railway crossings and surge protection tank, surge protection arrangements shall have to be done by the contractor with required soil bearing capacity test etc, and the cost of design shall be included in the quoted rate itself and no additional payment shall be made.
64. The offers shall be based on the bidder's own design and operating philosophy which should be within the overall frame work and guidelines mentioned in CPHEEO manual on water supply and treatment and as specified by the Employer in the bid document and its specifications.
65. The water supply system is proposed to be implemented for water demand for year 2047 except WTP, which is to be designed for intermediate requirement of 2032. However requirement of ultimate stage for WTP has to be designed and the components have to be proposed for implementing in II stage
66. The work of the contract package is divided in three parts:
 - a. Part A: Design-Build Works: Intake Works of 141 MLD, Raw Water Pumping Machinery, Electrical Substation, 90 MLD Capacity WTP (Treated water capacity), Clear Water Pumping Stations, Clear Water Reservoir and allied works.. Module of 45MLD WTP has to be designed for implementing in 2nd stage for 2047 requirement.
 - b. Part B: Item Rate construction works consists of laying of raw water main, clear water rising main for which design shall be provided by the employer. The Raw water main will be designed for 141 MLD and clear water main will be designed to carry the quantity of 135 MLD suit for the ultimate year 2047 requirement
 - c. Part C: Operation Service - Operation and Maintenance of Assets created under this contract.

5. DESIGN PHASE

67. The bidder's design shall include design on process, hydraulic, civil, electrical, and mechanical and instrumentations (including SCADA), for the following:
 - a. **Intake & WTP**
 - i. **Intake**

- Development of intake area. Intake work consisting of approach channel in River, intake well at bank of river, connecting pipe, jack well cum pump house, and allied works.
- 33 Kv Dedicated power line from Barari to Intake
- Raw water pumping machineries, electrical equipment, Instrumentation equipment and equipment for control system (SCADA)
- Approach road from jack well cum pump house to Vikramshila Bridge.
- Electrical sub-station including supply and installation of electrical equipment, transformers cables etc. for supply of power to raw water pumping station.
- , related associated/ allied appurtenant work from raw water pumping station to WTP (approximately 2550m) as defined in detailed scope of work with road restoration.
- River bank protection work near Intake work site,
- All EMI works including construction PLC & Battery Room.
- Boundary wall with barbed wire fencing with proper gate with guard room.

ii. **WTP**

- 90 MLD (with provision for future extension of some units to 135 MLD) Water treatment plant (WTP) comprising of settled water pumping machinery, raw water inlet channel, flash mixers, plate settlers, flocculation unit, clarifiers, rapid sand filters, back wash tank, chemical house and dosing system, chlorination unit with chlorine adsorption system, sludge handling and disposal units and clear water reservoir and clear water pumping station including pumping machineries, electrical equipment, Instrumentation equipment with flow measuring devices (Flow meters, flow transmitters, level transmitters etc.) and all equipment for SCADA.
- Electrical sub-station including supply and installation of electrical equipment, transformers cables etc.
- All EMI works up to automation (SCADA)
- Associated works includes- Administrative building with central monitoring unit, water testing laboratory, boundary wall, guard room, guard barracks, internal road and path ways, Drainage system, provision for drinking water supply facility to all units, workshop cum store, landscaping, beautification and arboriculture, weigh bridge and yard lighting/ illumination etc.
- Generated sludge storage yard & transporting facility
- Boundary wall with barbed wire fencing at WTP area with proper gate & guard room
- Bank protection work along right bank of river Ganga.

- The detail scopes, specifications & drawing have been specified elsewhere in the bidding documents.

b. Operation and Maintenance of Bulk water supply system

- Operation and Maintenance of intake works, raw water pumping station, raw water pumping main, all units of WTP and transmission network and electrical and mechanical works 24x7 of potable water for a period of 10 years.
- Planning of the entire system should be done in such a manner so as to optimize capital cost and operation and maintenance (O&M) costs of Intake works, WTP, pumping stations, transmission system and maintenance of appurtenant works.
- Dredging the approach channel periodically to maintain the entry of flow into the intake well by removing accumulated silt in the approach channel

5.1 DESIGN CRITERIA

5.1.1 RAW WATER QUANTITY/QUALITY AND TREATED WATER QUANTITY/QUALITY

a. Raw water and treated water quantities

Table 1: Raw and Treated Water Quantities

Phase	Design Year	Raw water Quantity (MLD)	Treated water Quantity (MLD)
Intermediate stage	2032	95	90
Ultimate stage	2047	141	135

68. The overall plant water loss (net) from the system shall be kept to the minimum and not exceeding 5% of output (considering recovery and recycle scheme). The pipes, launders and channels in the WTP shall be hydraulically designed for flow including 20% overload. The contractor shall quote rate for the pumping machinery and electrical equipment for Intermediate requirement.

b. Raw water quality parameters

Table 2: Raw Water Quality Parameters

Quality Parameters	Value of parameters Ganga River
	At location of proposed intake works
Physical Parameters:	
Temp (°C)	27
pH	7.5
Turbidity (NTU)	250-300
Chemical Parameters: (mg/l)	
D.O. (at the time of collection)	6.00

Quality Parameters	Value of parameters Ganga River
	At location of proposed intake works
Total Dissolved Solids	250

Date of collection of water samples: 10th May 2011.

69. The contractor shall carry out the sampling tests of raw water by themselves to ascertain the raw water quality for treatment process.
70. The quality of raw water may change time to time during rainy season from lower levels in river and the Contractor is to take these changes into consideration while designing the water treatment plant units. The Contractor shall ascertain the raw water quality before bidding.
71. The Contractor shall also carry out analysis of any other parameters required by him, which are not furnished in the raw water analysis supplied by independent supplementary as already stated. The Contractor shall, in addition, carry out the treatability tests (JarTest for ex.), he considers necessary to deliver the desired treated water quality. The turbidity of minimum 300 NTU shall have to adopt for design purpose of WTP with ratio of 2.00 for calculating suspended solids.

c. Guaranteed Treated Water Quality

i. Treated water quality

72. Treated water quality shall conform to provision in CPHEEO manual. Apart from the quality of the treated water and the indicated water levels at the output and input of the plant the Contractor has to guarantee the following process performances for various flows over the years.

Table 3: Quality of Treated Water Process Guarantees

Turbidity of the effluent of the clarifier unit	Not more than ≤ 10 NTU
Suspended solids in the effluent of the clarifier	Not more than 2.0 mg/l
Minimum filter run period at any time of the year between successive backwashing	24 h
Filter run during 95% time of the year	28h
Maximum water losses in WTP	5 % of the raw water input

Parameters with Units	Required Output Standard
Turbidity (N.T.U.)	< 1
Colour (Units on Platinum Cobalt Scale) TCU	≤ 5
Taste and Odour	Un objectionable
pH	7- 8.5
Faecal coliforms number/100ml	0

Parameters with Units	Required Output Standard
Coliform organisms number/100ml	0
Total Iron as Fe, mg/l	≤ 0.1
Residual Aluminium as Al, mg/l,	≤ 0.03
Manganese as Mn, mg/l	≤ 0.05
Chloride as (Cl), mg/l	200
Sulphate as (SO ₄), mg/l	200
Fluorides as (F), mg/l	1
Nitrates as (NO ₃), mg/l	45
Alkalinity, mg/l	200

73. If, at any time during O&M period, any of the quality and process parameters cannot be reached, the Contractor shall at his expenses carry out all necessary modifications to the civil structures, mechanical, hydraulic, electrical and other components of the plant, or modify the operation procedures and alter the chemicals/ Chemical dosing parameters in order to achieve the required performance of the plant.

5.1.2 MAJOR COMPONENTS AND CONCEPTUAL TREATMENT SCHEME

74. The conceptual scheme and the description of units have been indicated in the following sections. The bidder has to review the conceptual dimensions and adopt those that meet the design criteria specified for those units.

75. Major components are:

a. Part A

i. Intake Works: Brief description of civil & EMI works up to commissioning

- Construction of intake structure consisting following components:
 - Approach Channel
 - Constructed Channel
 - Intake Well
 - Connecting Pipes
 - Jack well & Pump House
 - Allied Works
- Construction of electrical sub-station including supply and installation of electrical equipment, transformers cables etc. for supply of power to Intake Wells (raw water pumping station) and Intake work site as per approved design, drawing and specifications.
- Supplying, Installation & commissioning of Pumping machineries, electrical equipment, Instrumentation equipment and equipment

for control system (SCADA) of raw water pumping station as per approved design, and drawing and specifications.

- Supply, fabricate and laying of MS pipes with accessories of raw water transmission main as per approved design, drawing and specifications.
- River bank protection work near Intake work site as per approved design, drawing and specifications.
- Construction of approach road from Jack well site at Vikramshila Birdge as per approved design, drawing and specifications.
- PLC room & battery room as per approved design, drawing and specifications.
- Workshop cum store, internal roads with drainage, landscaping and arboriculture, boundary wall including gate and guard room with toilet facilities at Intake work site as per approved design, drawing and specifications.
- Proper illumination of Intake (High mast & street lighting), firefighting arrangement & Intercom Facilities.
- Stand pipe as surge protection system.

ii. Water Treatment Plant (WTP): Brief Description of Civil & EMI Works up to Commissioning

- Improvement of existing sedimentation tanks, construction of settled water pumping station, , raw water inlet channel, flash mixers, flocculation unit, plate settlers (clarifiers), filter house with rapid sand filters, back wash tank/ reservoir, chemical house and dosing system, chlorination unit with chlorine adsorption system, sludge handling and disposal units and clear water reservoir and clear water pumping station as per approved designs, drawings and specifications. Before doing the improvement works structural analysis shall be undertaken to ensure the structural stability of the sedimentation tanks. Care shall be taken during the improvement work done for sedimentation works such that the improvement work shall not affect the existing water supply rendered to the Bhagalpur Town.
- Hydro-testing of entire water retaining structures.
- Construction of electrical sub-station including supply and installation of electrical equipment, transformers cables etc. for supply of power (through cable & electrical level trenches) to clear water pumping station and other units of the WTP as per approved designs and drawings and specification. The power claim of existing units at Barari water works shall be included in the electrical substation and existing substation shall be designed.
- Supplying, Installation & commissioning of all pumping machineries, electrical equipment, Instrumentation equipment with flow measuring devices (Flow Meters, Flow transmitters, Level transmitters etc.) and all equipment for SCADA system for entire

WTP including clear water pumping station as per approved designs, drawings and specifications.

- Setting up of laboratory with all water testing equipment as per approved designs, drawings and specifications.
- Construction of administrative building with all facilities including adequate size of conference room as per approved design, drawing and specification.
- PLC room & battery room as per approved design, drawing and specifications.
- Internal & external compound of WTP with proper illumination arrangement by providing high mast & street lighting facilities.
- Workshop cum store, security & guard room with toilet facilities.
- Bank protection work along right bank of Ganga River.
- Internal road and path ways with proper sewerage & drainage arrangement
- Proper sludge disposal arrangement
- Provision for supplying drinking water facilities with proper firefighting arrangement & Intercom facilities
- Landscaping, beautification and horticulture of the entire WTP area.
- Construction of boundary wall with adequate height of barbed wire fencing over boundary wall.

iii. Transmission System

- Transmission system shall start from CWR and serve all storage reservoirs proposed to be covered under phase-1. The pipe line shall be laid up to Inlet of ESR including connection.

iv. Associated works of Intake & WTP: Brief description of Civil & EMI Works up to commissioning

- Supply and installation of all equipment & machineries at all location of Intake & WTP
- Provide all pumping machineries and equipment at filter house, chemical dosing system in chemical house, chlorine dosing system including chlorine gas absorption system. Improvement of the existing
- sludge disposal system, water testing laboratory with instruments, apparatus, reagents etc. guards' barrack, central monitoring units with SCADA system for intake & WTP, internal roads, drain, sewerage & drainage system, landscaping and arboriculture compound, electrical sub stations including supply and installation of transformers, MC panels, cables switches etc. with all necessary accessories, boundary wall including gates and guard room at WTP & Intake site as per approved designs and drawings & specifications.

- All balance Civil & EMI works of the Intake & WTP up to commissioning stage.

v. Trial run and commissioning of the project: Brief description of Civil & EMI Works up to Pre handing over

76. Trial run and commissioning of all civil, mechanical pumping machineries, equipment for all EMI works for all units of Intake pumping station and Water Treatment Plant & clearwater pumping station.

b. Part B: Brief Description of Civil & EMI Works up to Handing over

77. **Operation and Maintenance (O&M).** Operation and maintenance (O&M) of the entire water supply system including pumping of 90 ML raw water from intake, production of 90 MLD treated water at WTP, supplying and conveying of the produced treated water up to ESR of all zones for the period of 10 years including all associated works with trial run & commissioning of all Civil, Electrical, Mechanical & Instrumentation (EMI) equipment & Works of the entire transmission system.

5.2 SCOPE OF WORK

a. General

78. The contractor shall ensure the technical feasibility of the offer submitted after visiting the site. " the Contractor shall be required to design and execute every such item(s) of work(s) which are considered required or necessary for the satisfactory completion and functioning of the entire work, commissioning of Civil, Electro-Mechanical & Instrumentation (EMI) Equipment and 33 KV electrical sub-station, lying of 33kv dedicated line from barai to intake well, operation and maintenance during the O&M period including the Retention Period etc. even if such items of work are not specified in the bid document, but are essential to complete the scheme.
79. The Employer has carried out survey and investigations relevant to different project components. Locations of the intake well and raw water pump station, water treatment plant, reservoir, electrical substations and the alignment of the proposed pipelines have been defined and the required land identified as shown in tentative layout drawing. The details of the same, relevant to this contract, have been presented in the subsequent subsections and elsewhere in this document.
80. Pinpointed location of Intake wells , detailed design and drawings of Intake wells, Raw water pumping station, , approach bridge and all components of WTP, shall be prepared by the Contractor and to be approved by the Employers Representative before construction and procurement of materials. The Contractor shall be responsible for ensuring that the Project fulfils the objectives for which it has been designed. The Contractor is required to carry out further survey and investigations to verify the data given in this document for detailed design of different units of this project. By providing latest technology, design, supply & installation of modern Electro-Mechanical & Instrumentation equipment with tools & tackles

81. The scope of work includes but is not restricted to all necessary site investigations, raw water testing, functional planning, detailed design including hydraulic, process design, layout plan, structural design, GA & structural drawings, equipment design, development and preparation of detailed structural working drawings for civil, electrical, mechanical, instrumentation system, and detailed structural steel fabrication drawings, preparation of design report, manufacture and testing at places of manufacture, painting, packing, transport, delivery, supply, storage, erection, building – in, setting to work, commissioning, testing, painting, lining and finishing after erection of all works, including pipelines, pumps, pumping installations, machinery apparatus, flow meters at various installations, station pipe work, lifting, handling and ventilation equipment, electrical equipment instrumentation, control, lighting systems, electrical sub-station, earthing and lighting protection systems, materials, articles, fittings and accessories, ancillaries, ancillary works, enabling works of all kind and nature required for installations of the highest possible operative standards and for compliance with the standards prescribed in the specification and with the particulars and guarantees entered by the contractor in the schedules.
82. The Contractor shall, to the maximum extent practical and feasible, endeavour to standardize on the manufacture and supply of Plant and equipment so as to minimize the operation and maintenance requirements. The Contractor shall ensure that his designs are "maintenance-friendly" and that all items of Plant and equipment are designed and installed in a manner which will facilitate routine and periodic maintenance operations.

b. Activities to be performed

83. Following activities shall be carried out for design of each component of this contract but shall not be limited to:
- a. Investigations, Surveys
 - Performing necessary topographical surveys of the proposed intake work site, proposed alignment of raw water pumping main and water treatment plant site, topographical survey of the transmission main, in consultation with the Employer's Representative so as to verify the data provided in the Bid Documents.
 - Performing required geotechnical investigations for the design of different components of Intake structure/s, WTP, River and Nala crossing locations by the transmission lines & allied works.
 - Performing raw water quality analysis for design of the water treatment process
 - Performing bathymetric survey in and around the proposed location (shown in drawings), pinpoint the intake well locations & estimation of high water level (HWL) & low water level (LWL) to be used for Intake design.
 - b. Documents to be submitted for approval
 - Detailed workplan for procurement, engineering, construction, installation, trial run & commissioning (Weekly, Monthly & Quarterly report preferably in WBS, S curves & MS Project), methodology of works, mobilization of workers & supervision staff, mobilization of machineries, material

procurement plan, safety plan, quality assurance plan, and measures to complete the work within stipulated time.

- c. Design work shall include as follows:
- Layout plan showing pin-pointed location of intake well/wells, Intake work site, proposed alignment of raw water pumping main and different units of WTP site.
 - Process and hydraulic design of Water Treatment Plant including Intake and Raw water pumping main.
 - Intake well, raw water pump house, with jack well and connecting pipe, riverbank protection work, raw water pumping machinery, local & central SCADA system, electrical substations cable trenches & allied works.
 - Raw water pumping main & allied works
 - Design and drawings of different units of treatment process including settled water pump, sludge treatment & disposal system, filter house, clear water reservoir, clear water pumping station & machineries, chemical building & chemical dosing system, chlorination building and chlorination dosing system, chlorine gas absorption system, central monitoring unit & water testing laboratory, support buildings, substation, river bank protection, approach road & associated drainage, internal road & drainage compound walls, guardroom, central/local SCADA & all works of Intake, WTP & transmission network.
 - Structural design and drawings (including reinforcement detailing) for all the created structures taking into consideration the functional reliability and structural safety of the buildings and all design shall be done considering IS Code as mentioned for seismic Zone- V criteria.
 - Layout plans and all other drawings for planning and construction of all components of the project.
 - Storm water drainage plan at WTP premises and further disposal up to River.
 - River bank protection works.
- d. Working drawings & others:
- General arrangement drawings (GAD), structural drawings of all components of Intake structure, River bank protection work, approach roads and Water Treatment plant site and architectural plan & elevations of all structures,
 - GA & structural drawings, equipment design, development and preparation of detailed structural working drawings for civil, electrical, mechanical, instrumentation system, and detailed structural steel fabrication drawings, preparation of design report,
 - Design and drawings of treated water transmission system.
 - O&M manual indicating schedules for routine, preventive and emergency maintenance procedures.

5.3 ACTIVITIES FOR WORK

a. Preparatory works

- Establishing fully equipped field offices. One furnished office for supervision of the works for the Contractor's staff and another furnished office/s for the Employer's Representative/s.
- Construction of suitable storage spaces, temporary go-downs for construction materials, pipes and equipment to be supplied and used for the works.
- Identification of suitable quarries and other sources for construction materials and get them approved by the Employer's Representative/s.
- Mobilization of requisite staff with qualified engineers and technicians, laboratories suitable for adhering to the Quality Assurance Program. Construction of suitable labour camps with all electrical, water and sanitation facilities required under the relevant Labour laws & adaptation of HSE at site & labour colony.
- Making arrangements for equipment and materials required for maintaining the safety (HSE) of the sites and the workmen at the sites (helmets, safety shoes/boots, jackets, safety belts, gloves, scaffolding, barricading, spectacles, dust protectors etc.),
- Submission of an initial work program and schedule and project calendar and updating the same every month for approval by the Employer's Representative/s. This shall be prepared on latest version of project management software such as MS project / primavera.
- Site clearance and leveling of the work site, as per approved drawings
- Setup worksite testing laboratories with testing Instruments as mentioned elsewhere, for adhering quality assurance.
- Functional and structural design of the following components shall be got vetted by any one of the Indian Institute of Technology (IIT) by the contractor before submitting for approval. No separate cost shall be paid to the contractor and contractor shall include such cost while quoting the cost for the components: -
 - Intake well,
 - Jack wellcum pump house,
 - WTP
 - Improvement of sedimentation tank

b. Execution of work

- Construction of all civil structures of Intake structure and associated drainage, raw water pumping main and all units of WTP; and transmission works. Suitable foundation arrangements has to be made isolated footings, raft footing, combined footings, or pile foundation. No additional payment shall be made on change of type of footings proposed for any structure.
- Disposal of surplus soil and construction waste as directed by Employer's Representative, and maintaining the construction site in orderly manner.
- Performing tests on materials received and for the finished works and maintaining complete records and registers required on site as per the QA/QC Manual.

- Factory and field testing, pre-dispatch inspections, packaging, transportation to the project site, providing transit insurance, storage, handling at the sites, installation, trial runs, pre-commissioning and commissioning of all components of the system including the pipes, fittings, hydraulic, mechanical, electrical and instrumentation equipment.
- Providing spare parts, tools and specials, as mentioned elsewhere
- Providing "on the job" training to employer's personnel.
- Remedying any defects identified during the Contract period and as mentioned elsewhere.
- Site clearance and restoration of the premises after completion of the work.
- Submission of 'As Built' drawings and Operation and Maintenance Manuals.
- Keeping day to day record of material on site, its consumption in proper registers for verification by Employers representative.
- Deployments of safety personnel with all safety safeguard arrangements.

Note:The Contractor to maintain existing utility services like electricity, water supply, telephone; oil/gas pipe lines etc. within the project area. Cost of all the shifting of poles, cables etc. if required shall be borne by the contractor.

5.4 MAJOR COMPONENTS OF WORKS-DESIGN

5.4.1 DRAWINGS AND INFORMATION TO BE PROVIDED

5.4.1.1 GENERAL

84. The drawings that will be prepared and issued for this Contract shall be classified as follows and where relevant shall be to a scale which is suitable for the representation of those details illustrated.
85. The term Drawing shall be deemed to include all drawings, schedules, lists, software documentation, descriptive text and calculations necessary for the design, construction, operation and maintenance of the Works and referred to in this clause.
86. Drawings and all other submittals required by this contract shall be submitted in editable electronic softcopy format on CD(s) or DVD(s) as well as in hardcopy paper format in 6 copies..
87. The softcopy format for various items shall be as follows:
 - Drawings: Latest AutoCAD version
 - Text Documents: Microsoft Word version 2007 or 2010
 - All programmers and schedules related to the project: Microsoft Project version 2003 or 2007
 - Spreadsheets, calculations, tables, technical schedules, prices schedules, and other numerical data: Microsoft Excel version 2007 or 2010

- Databases: Microsoft Access version 2010
- All other required information not included in the above: Adobe Portable Document Format (PDF) version 7.x

The hardcopy format/sizes for various items shall be as follows:

- Drawings: Standard A1 size paper. The scale for each drawing shall be selected such that the information is presented without any clutter or ambiguity and is clearly and easily legible without the use of magnifying aids other than a reader's normal eye-glasses.
- All other information: Standard A4 or A3 paper size, except for any pre-printed standard information such as brochures or catalogue information, which may be submitted in the original size and format.

5.4.1.2 DRAWING FORMAT AND NUMBERING

88. All drawings shall be prepared using an identical title block format. This shall be approved by the Employers Representative and shall identify the project, drawing title, the Employer, the Contractor, Sub-contractor, if applicable, and the Employers Representative.
89. A formalized drawing numbering system shall be adopted with digits of each number, referencing location, revision, drawing type and size. The numbering format and allocation of drawing number blocks shall be approved by the Employers Representative.
90. The Contractor shall provide a sequential numbering system for all Construction Documents. The drawing number shall not be repeated or duplicated.
91. All drawings shall be submitted to a formalized checking procedure prior to submission. Drawings not so checked will not be approved.

5.4.1.3 PRE-CONTRACT DRAWINGS

92. The Pre-contract Drawings are those issued to Bidders either with the Bidding Documents for the purpose of illustrating and clarifying the Works described in the Employer's Requirements or later during the bidding period as part of an Addendum to the Contract Documents.
93. Such drawings shall be deemed to have been issued for the guidance of Bidders and shall, for the purpose of executing the Works, be superseded by the Construction Documents.

5.4.1.4 BID DRAWINGS AND DETAILS

94. The Bid Drawings are those furnished by a Bidder with his Bid for the purpose of illustrating and clarifying his proposals.
95. The following drawings, details and specific information pertaining to the entire water treatment process, intake, and all components of the project, the Bidder in the technical envelope in addition to other information mentioned elsewhere in the tender. The lists provided below shall not be considered comprehensive. The bidder shall be responsible for including any and all drawings and information for any and all works that may be necessary for full and complete definition or

clarification of the design, regardless of whether or not such drawings, information, or works are explicitly included in the lists below or elsewhere in these bid documents.

General and Process

- (i) Narrative Description of the Works
- (ii) Project component and Operation and Control Philosophy
- (iii) Sizing and Design Calculations covering all Major Unit Processes and components of the Works
- (iv) List of all structures (, tanks, channels, buildings, etc.) including dimensions and freeboards
- (v) Complete Equipment List
- (vi) All Equipment Catalogues and selection chart (with all relevant manufacturers' documentation).
- (vii) Major Piping Schedule to include service (process stream), installation type (e.g., buried, exposed, submerged, etc.), size, material, coating, lining, joint type(s), gauge/thickness, pressure rating, testing protocol, design standards
- (viii) Major Valve Schedule to include service (process stream), installation type (e.g., buried, exposed, submerged, etc.), size, type, material, joint type(s), pressure rating, differential pressure rating, testing protocol, design standards, operator/actuator type, and whether Open/Close or Modulating
- (ix) Major Gate Schedule to include service (process stream), installation type (e.g., buried, exposed, submerged, etc.) size, type, differential head, seating or unseating, testing protocol, design standards, operator/actuator type, and whether Open/Close or Modulating
- (x) Components Layout.
- (xi) Hydraulic Profile.
- (xii) Process Flow Diagram.
- (xiii) Process and Instrumentation Diagrams (P&IDs).
- (xiv) Electrical Load List & Power Consumption Chart.
- (xv) List of Chemical Consumption on Daily/ Monthly Basis.

Mechanical

- (i) To-scale dimensional layout and/or installation drawings for the following Equipment, at a minimum:
 - Raw water Pump sets
 - Major gates
 - Intake Coarse Screens
 - Medium Screens
 - silt removal equipment
 - Process Air Blowers

- Clarifiers
 - Plate settlers
 - sludge pump sets
 - Clear water pumps set
 - Chlorination system
 - Alum dosing system
 - Water Pumps at WTP
- (ii) Graphs for all major pumps (including but not limited to Raw water Pumps, clear water pumps, desilting pumps,):
- Pump Performance Curves : Q vs H, speed, P, Efficiency, and NPSH
 - ISO-efficiency curves of the pump model proposed

Electrical

WTP:

- Electrical Load List.
- Electrical Single Line Diagram of WTP.
- Sizing Calculations for Transformers
- Specific Energy Consumption
- Technical Schedules-V for Electrical Works duly filled in.
- Instrumentation SCADA
- Construction schedule

Intake:

- Electrical Load List.
- Electrical Single Line Diagram of.
- Sizing Calculations for Transformers
- Specific Energy Consumption
- Technical Schedules-V for Electrical Works duly filled in.
- Instrumentation SCADA
- Construction Schedule

Details of Drawings and Calculations to be submitted by the Contractor or Approval

a. Construction Documents

96. The Contractor shall submit to the Employers Representative three (3) copies each of the initial design calculations (with hydraulic calculations) for the process and sizing of all components of each system including architectural, structural, mechanical, electrical and instrumentation for all relevant structures and equipment, supported by flow diagrams and general arrangement drawings for approval. It is a matter of high priority that the Contractor ensures the submission and finalization of such designs and drawings in the stipulated time schedules. It is

the intention of the Employer to ensure that the approval of such submissions is made expeditiously. The Contractor is therefore required to set-up their nucleus design office in Bhagalpur (fully equipped and staffed). This project office shall be duly backed up by a full design office at the Contractor's headquarters to enable continuous submission, interaction and timely clearances. The Employer intends to keep a team of experts available continuously during the initial six months of the Contractor's schedule to review and comment on and/or approve the submissions expeditiously.

97. The Employers Representative will arrange to send review comments within seven(7) days of submission of the design and drawings to the Contractor for rework and modifications, if any. The Contractor shall incorporate all applicable comments of the Employers Representative in the resubmitted design and drawings, and shall resubmit three (3) copies each of the revised design and drawings within 14(fourteen) days for review and approval by the Employers Representative . The Contractor shall thereafter submit six (6) copies each of the approved design and approved drawings. This ensures approval of the final design/drawing within 21 days of first submission, if only two (2) submittals by the Contractor are necessary. If the submissions require more than one round of revision on account of incomplete compliance from Contractor, the delay will be the responsibility the Contractor and he shall be held responsible for any schedule delays. If new observations are given by the Employers Representative, the Contractor will be entitled to take an additional 14 day period for compliance. Only white paper prints shall be submitted. Hard as well as soft copies of all designs and drawings are also to be submitted.
98. Further design calculations and drawings shall be submitted in sequence in accordance with a schedule to be developed by the Contractor and agreed upon mutually with the Employer's Representative, immediately after submission of the general arrangement drawings. For each component of each system, and for the Project as-a-whole, these documents shall also cover:
 - i. Process design, system design and layout of all components
 - ii. Intake work and WTP site layout plan showing all units
 - Site plans.
 - Layout plans.
 - iii. Drainage and service roads
 - iv. Architectural drawings/renderings.
 - v. Foundation plans.
 - vi. Pipeline plans and profiles.
 - vii. Detailed structural design and drawings pertaining to all components of the system.
 - viii. Drawings showing the size, position and other necessary details of all mechanical and electrical equipment and fixtures.
 - ix. Wiring diagrams, pressure control and motor control gear particulars.

- x. Details of foundations, position of openings, etc., for the pumps, motors, starting cubicles, LT/HT panels, etc.
 - xi. Power systems including sub stations/switch yard and associated drawings (e.g. single line diagram, layout plans and sections)
 - xii. Manufacturers' shop and parts drawings for each piece of equipment.
 - xiii. Services like internal illumination and ventilation, building water supply, sanitation and plumbing, service roads, landscaping, yard lighting, etc.
 - xiv. Any other design and drawings required to comply with the Employer's requirements as described in these specification subsections.
 - xv. Data, drawings & reports of survey and Investigation data & drawing verified or conducted by Contractor.
99. The documents and drawings shall be in sufficient detail for review by the Employer's Representative. The scale of each drawing has to be chosen in co-ordination with the Employer's Representative. The drawings shall be of standardized sizes as instructed by the Employer's Representative and shall contain the following basic information in the title block:
- a. Project name
 - b. Name and package no. of the Contract
 - c. Contractor's name
 - d. Number and title of the drawing
 - e. Date and scale
 - f. Name of the designer and draftsman responsible – with contact numbers
 - g. Revision Number (R0 for drawing submitted initially and R1, R2, etc., subsequently).
100. A blank space 90 mm x 50 mm shall be provided immediately above the title block for the approval stamp. If required in the document elsewhere, the detailed design and the execution drawings shall be submitted only after verification by an institute approved by the Employer. The Contractor shall be responsible for preparation of working drawings and the construction documents for works, as specified in the Contract.
- b. As Built drawing**
101. Drawings / Calculations for approval shall be submitted by the selected Contractor after award of the contract in two Phases.
102. The first phase shall be the Preliminary Drawings / Designs. Drawings / Designs submitted during this phase shall be of sufficient detail for the Employer and Employers Representative to understand in outline the Contractor's proposals for the design and construction of the Works. The lists provided below shall not be considered comprehensive. The bidder shall be responsible for including any and all drawings and information for any and all works that may be necessary for full and complete definition or clarification of the design, regardless of whether or not

such drawings, information, or works are explicitly included in the lists below or elsewhere in these bid documents.

103. The Preliminary Drawings / Designs for WTP and, shall inter alia comprise:

- Detailed Description of the proposed water Treatment Plant and Treatment Process offered (including Raw and Treated water Quality).
- Detailed Plant Operation and Control Philosophy.
- Detailed Process Design Calculations / Mass Balance Calculations covering all Units/ Equipment.
- Detailed List of Units including Unit Dimensions/ Free Boards.
- Detailed Equipment List
- Major Equipment /Instrument Specifications (with supporting Brochures).
- Major Piping Schedule to include size, material, coating, lining, gauges/thickness, and pressure rating
- Major Valve Schedule to include size, type, material, pressure rating, operator/actuator type, and whether Open/Close or Modulating
- Gate Schedule to include size, type, differential head, seating or unseating, operator/actuator type, and whether Open/Close or Modulating
- Detailed Plant Layout (including Pipe Sizes/ Pipe Routing/ Channel Size/ Channel Routing/ Site Roads/ Site Drainage)
- Detailed Hydraulic Profile including Hydraulic Calculations;
- Detailed Process Flow Diagram (inclusive of Mass Balance)
- Process and Instrumentation Diagram (P&ID) & SCADA.
- Detailed Electrical Load List for WTP , Intake prepared based on approved Equipment list from process and Mechanical
- Transformer sizing calculation for WTP , intake based on approved Electrical load list
- Detailed Chemical Consumption Calculations (Daily/ Monthly Basis).

104. The second phase shall be the Detailed Engineering Design phase and shall comprise the submission of the Detailed Mechanical/ Electrical/ Instrumentation/ SCADA/ Structural/ Civil Construction Drawings and Calculations. These shall be submitted after the approval of the Preliminary Drawings. The lists provided below shall not be considered comprehensive. The bidder shall be responsible for including any and all drawings and information for any and all works that may be necessary for full and complete definition or clarification of the design, regardless of whether or not such drawings, information, or works are explicitly included in the lists below or elsewhere in these bid documents.

105. The Construction Documents shall be used for the construction of the Works and shall inter alia comprise:

Civil

Site layout for WTP, and intake providing information on levels and detailing the location of:

- General arrangements and main sections of all component areas;
- Plans, elevations and main sections of all structures and buildings;
- Buildings;
- Storage tanks;
- Process plants;
- Transformer enclosures;
- Roadways;
- Buried pipelines;
- Cable routes for direct in ground and ducted systems;

Detailed drawings of:

- Cable and pipework chambers;
- Buried pipework;
- Pipework connections;
- Contract interface;
- Reinforcement drawings;
- Bar bending schedules.

Calculations for:

- Detailed Structural Design calculation of all the units/ Structures;

Hydraulic

- Detailed hydraulic profile;
- Detailed hydraulic calculations

Process

Drawings:

- process flow diagram;
- comprehensive P&ID including details of:
 - Pipeline sizes and materials;
 - Valve size and type;
 - Equipment detail
 - Instrumentation;
 - Identification of controlling PLC.

Calculations for:

- Detailed Process Design Calculations / Mass Balance Calculations covering all Units/ Equipment.
- Detailed List of Units including Unit Dimensions/ Free Boards.
- Detailed Equipment List

- Major Equipment /Instrument Specifications (with supporting Brochures).

- Major Piping Schedule to include size, material, coating, lining, gauges/thickness, and pressure rating
- Major Valve Schedule to include size, type, material, pressure rating, operator/actuator type, and whether Open/Close or Modulating
- Gate Schedule to include size, type, differential head, seating or unseating, operator/actuator type, and whether Open/Close or Modulating
- Detailed Process Flow Diagram (inclusive of Mass Balance)
- Detailed Electrical Power Consumption Calculations for WTP intake clear water pump house
- Detailed Chemical Consumption Calculations (Daily/ Monthly Basis).

Mechanical

Drawings:

Outline dimensional drawing & Cross section Drawing (with Material of construction) for the following items for WTP and intake but not limited to:

1. Raw water Pumpset
2. Coarse screens
3. Sluice valve – motorized
4. Sluice valve – manually operated
5. Non-Return valves
6. Knife Gate Valves
7. Dismantling joints
8. H.O.T & E.O.T Cranes
9. Dewatering Pumpset
10. silt removal equipment
11. Clarifier
12. Chlorination system
13. Sludge pumps
14. Alum dosing system
15. Chlorination system
16. Plant Water Pumps
17. Chemical Dosing Pumps and Agitators

Graphs for all major pumps (including but not limited to intake Pumps, clear water pump, ,):

- Pump Performance Curves : Q vs H, Speed, P, Efficiency, and NPSH
- Iso-efficiency curves of the pump model proposed

Motor Curve

- Starting Current vs Time
- Characteristics

Electrical

Intake and WTP:

- (1) Single Line Diagram of Complete Electrical System for WTP and Intake based on the equipment finalized by Mechanical and Process.
- (2) Electrical Substation Layout of intake and WTP showing Panel locations, Transformer locations and Trench Layout.
- (3) 33kV Switchgears
 - (a) Dimensional Drawing showing overall dimensions, plan, elevation and cable entry details.
 - (b) Complete assembly` drawings of the Switchgear showing plan, elevation and typical sectional views, details of busbars and location of cable end boxes and control cable terminal blocks for external wiring connections, etc.
 - (c) Foundation plan showing the location of channel sills, anchor bolts and anchors, floor plans and openings.
 - (d) Schematic power and control wiring diagrams along with control & interlock details, complete bill of materials indicating make, type, rating, setting etc. of Circuit breakers, relays, contactors, current transformers, potential transformers, instruments, meters, annunciators etc .
 - (a) Single Line & Schematic diagrams showing details of Power & Control, Change over, AMF details, Synchronising details, interlocks, protections annunciators, battery , battery charger etc. with make, type, rating, setting etc. of various equipment, components etc.
 - (b) Foundation plan showing the location of channel sills, foundation, anchor bolts and anchors, floor plans and openings.
 - (c) Exhaust system with piping layout
 - (d) Day oil tank sizing with mounting arrangement details
 - (e) Fuel bulk storage tank sizing with mounting arrangement details
 - (f) Fuel supply system with pipe arrangement.
- (4) 33kV / 0.433 kV Transformers
 - (a) General arrangement drawing of the transformer, showing plan, front elevation and side elevation complete with all accessories and fittings, detailed dimensions, net weights, quantity of oil, clearances between HV terminals, between LV terminals, between HV and LV terminals, between HV & LV terminals and ground etc.
 - (b) Rating, diagram and terminal marking, complete with polarity and vector group.
 - (c) Control wiring diagram for marshalling box.
 - (d) Foundation drawing with position of foundation bolts and depth.
- (5) L.T Panels, Distribution Boards, Power Control Centres, Power Motor Control Centres, Motor Control Centres etc.

- (a) Dimensional Drawing showing overall dimensions , plan, elevation and cableentry details.
 - (b) Complete assembly drawings of the switchboard/distribution board / MCC showing plan, elevation and typical sectional views, details of busbarsand location of power & control cable terminal blocks for external wiring connections, etc.
 - (c) Foundation plan showing the location of channel sills, anchor bolts and anchors, floor plans and openings.
 - (d) Schematic power and control wiring diagrams along with control & interlock details, complete bill of materials indicating make,type,rating,settingetc
 - (e) Circuit breakers, relays, contactors, current transformers, potential transformers, instruments, meters, annunciations etc.
 - (f) Feeder Operation and Interlock logic.
- (6) L.T Capacitor bank with Automatic Power Factor Correction Relay
- (a) Fully dimensioned general arrangement drawings of capacitor and capacitor control panel with elevation, side view and sectional view and foundation details.
 - (b) Justification for number of steps for switching.
 - (c) Complete schematic and wiring diagrams for capacitor control panel.
- (7) Variable Frequency Drives
- (a) Dimensional details with mounting arrangement.
 - (b) Schematic power and control wiring diagrams along with control & interlock
 - (c) details, complete bill of materials indicating make, type, rating, setting etc. of Circuit breakers, relays, contactors, current transformers, potential transformers, instruments, meters, annunciations etc.
 - (d) Specific details of converter, inverter and harmonic control units.
- (8) Battery and Battery Charger with D.C. Distribution board
- (a)Dimensioned general arrangement drawings
 - (b) Fully dimensioned general arrangement drawings of battery and battery charger with elevation, side view, sectional view and foundation details
 - (c) Complete schematic and wiring diagrams
- (9)Cabling System
- (a) Make and type of HT& LT Power and Control Cables.
 - (b) Details of Installation of Cables in Trenches, on cable trays, directly buried Etc at all locations inside the plant.
 - (c) Cable routing plan and section inside the plant.
 - (d) 33kV Cable termination and mounting Kit Layout drawing.
- (10) Lighting system

- (a) Make, type, rating etc of various fixtures, receptacles, switches etc in various premises.
 - (b) Make, type, rating etc of various fixtures, lighting poles etc for street lighting and flood lighting.
 - (c) Detailed Room wise Lighting Layout with Type of fixture details and Circuit diagram showing phase wise load distribution and interconnection between switches, fixtures, Lighting panel, receptacles etc.
 - (d) Internal road Lighting and Area lighting layout with location of poles, details of fixtures and mounting.
 - (e) Street Light pole details with Foundation details.
- (11) Earthing System
- (a) Details such as material, sizes, etc. of the earth conductor and electrode pits.
 - (b) Earthing layout drawing showing routing of main grid inside the plant with details of interconnection of equipment earthing to the grid and earth pits.
- (1) 33kV / 0.433 kV Transformers
- (a) General arrangement drawing of the transformer, showing plan, front elevation and side elevation complete with all accessories and fittings, detailed dimensions, net weights, quantity of oil, clearances between HV terminals, between LV terminals, between HV and LV terminals, between HV & LV terminals and ground etc.
 - (b) Rating, diagram and terminal marking, complete with polarity and vector group.
 - (c) Control wiring diagram for marshalling box.
 - (d) Foundation drawing with position of foundation bolts and depth.
- (2) L.T Panels, Distribution Boards, Power Control Centres, Power Motor Control Centres, Motor Control Centres etc.
- (a) Dimensional Drawing showing overall dimensions, plan, elevation and cable entry details.
 - (b) Complete assembly drawings of the switchboard/distribution board / MCC showing plan, elevation and typical sectional views, details of busbars and location of power & control cable terminal blocks for external wiring connections, etc.
 - (c) Foundation plan showing the location of channel sills, anchor bolts and anchors, floor plans and openings.
 - (d) Schematic power and control wiring diagrams along with control & interlock details, complete bill of materials indicating make, type, rating, setting etc. of Circuit breakers, relays, contactors, current transformers, potential transformers, instruments, meters, annunciators etc.
 - (e) Feeder Operation and Interlock logic.

- (3) L.T Capacitor bank with Automatic Power Factor Correction Relay
 - (a) Fully dimensioned general arrangement drawings of capacitor and capacitor
 - (b) Control panel with elevation, side view, sectional view and foundation details.
 - (c) Justification for number of steps for switching.
 - (d) Complete schematic and wiring diagrams for capacitor control panel.
- (4) Variable Frequency Drives
 - (a) Dimensional details with mounting arrangement.
 - (b) Schematic power and control wiring diagrams along with control & interlock details, complete bill of materials indicating make, type, rating, setting etc. of Circuit breakers, relays, contactors, current transformers, potential transformers, instruments, meters, annunciators etc.
 - (c) Specific details of converter, inverter and harmonic control units.
- (5) Battery and Battery Charger with D.C. Distribution board
 - (a) Dimensioned general arrangement drawings
 - (b) Fully dimensioned general arrangement drawings of battery and battery charger with elevation, side view, sectional view and foundation details
 - (c) Complete schematic and wiring diagrams
- (6) Cabling System
 - (a) Make and type of HT& LT Power and Control Cables.
 - (b) Details of Installation of Cables in Trenches, on cable trays, directly buried etc at all locations inside the plant.
 - (c) Cable routing plan and section inside the plant.
 - (d) 11kV Cable termination and mounting Kit Layout drawing.
- (7) Lighting system
 - (a) Make, type, rating etc of various fixtures, receptacles, switches etc in various premises.
 - (b) Make, type, rating etc of various fixtures, lighting poles etc for street lighting and flood lighting.
 - (c) Detailed Room wise Lighting Layout with Type of fixture details and Circuit diagram showing phase wise load distribution and interconnection between switches, fixtures, Lighting panel, receptacles etc.
 - (d) Internal road Lighting and Area lighting layout with location of poles, details of fixtures and mounting.
 - (e) Street Light pole details with Foundation details.
- (8) Earthing System

- (a) Details such as material, sizes, etc. of the earth conductor and electrode pits.
 - (b) Earthing layout drawing showing routing of main grid inside the plant with details of interconnection of equipment earthing to the grid and earth pits.
- (9) Electrical Equipment and Panel Layout for IPS.

Schedules

WTP and intake

- (1) Cable schedules & bill of quantities
- (2) Electrical Load and Power consumption schedule
- (3) Junction box schedule
- (4) Protection relay setting schedule.

Calculations

WTP and intake

- (1) Specific Energy Consumption Calculations.
- (2) Bus bar sizing calculation for 11 KV Switchgears, 415 V Switchgears etc.
- (3) Coordinated protection study.
- (4) Fault level and Voltage Dip Calculations.
- (5) Sizing of Capacitor banks.
- (6) Non Segregated Bus Duct
 - (a) Sizing of the bus bars vis-à-vis thermal capability to withstand rated continuous current and one second short time current.
 - (b) Spacing of the insulators vis-à-vis mechanical strength to withstand forces due to momentary short circuit current.
 - (c) Heat loss and temperature rise calculations for conductor and enclosure. All formulae and other information from which the heat losses have been derived shall be enlisted.
- (7) HT and LT Cable sizing.
- (8) Earthing sizing calculation
- (9) Room wise Lighting Calculation as per Lux level given in the specification.
- (10) Building Lightning Protection and Earthing Sizing Calculation.

Control and Instrumentation

Drawings:

- power supply distribution single line and schematics diagrams (see note 1) for each control panel;
- internal and external (see note 2) general arrangement for each control panel (dimensional);
- Control panel wiring diagram, , relay logic diagram along with terminal block details;

- System configuration and layout diagram along with bill of material, program listings, block logic diagram and control logic write up for PLC;
- UPS and battery sizing calculations;
- control and instrumentation loop drawings (see note 3);
- instrument installation detail drawing (hook up, see note 4);
- cable block diagrams;
- cable routing/installation drawings;
- foundation and fixing details and trenches drawings;
- mimic general arrangement (full colour copies shall be provided).

Schedules:

- cable schedule;
- cable interconnection schedule;
- control and instrumentation load schedule for each control panel;
- I/O schedule;
- junction box schedule;
- instrument schedule with tag nos;
- instrumentation, process control set point schedule;
- instrument data sheets;

Documentation:

- functional design specification (FDS)(see note 5);
- factory acceptance test document (FAT);
- site acceptance test document (SAT).

Notes:

1. Schematic drawings shall include a comprehensive schedule of the components used in each switchboard, MCC and control panel including details of the type, manufacturer and rating of each component.
2. The external arrangement of each switchboard, MCC and control panel shall show the arrangement of all components including details of panel section, switch and instrument labels.
3. Control and instrumentation loop drawings shall show on a single drawing the complete circuit associated with an instrument or device including details and location of power supplies, cabling and terminations.
4. Hook up drawings shall detail how an instrument or device is installed.
5. See details later for requirements of the FDS.

Electrical control schematics, loop diagrams and schedules shall where practical be A3 size drawings; all other drawings shall be A1 size.

Mechanical Building Services

Drawings:

- single line schematics for waste water system and drainage systems;
- general arrangement drawings showing the location of each mechanical building service plant item;
- general arrangement of ventilation systems;
- fixing details.

Schedule:

- plant data sheets with Equipment GA dimensional drawing, Foundation detail, Calculation and Manufacturer's Quality Assurance Plan;
- pipeline schedules;
- Valve schedules.

Calculations for:

- System & Equipment sizing.

The Employers Representative reserves the right to ask for additional Equipment/system information apart from the above to ascertain good system design and proper selection of Equipment.

5.5 AS-BUILT DRAWINGS

106. These drawings shall be compiled by the Contractor and shall constitute a permanent record of the Works as executed. These shall include all such drawings, schedules, documentation and calculations as necessary for a complete understanding of the Works design, operation and maintenance.
107. The As-Built Drawings shall consist of the fully up-dated versions of the approved Construction Documents incorporating any additional information which will assist the Employer in operating, maintaining and if necessary modifying or extending the Works at a later date. These drawings should extend and supplement the information given in the Operating and Maintenance Manuals.
108. A3 and smaller sized As-Built Drawings shall be provided on durable paper for reproduction by photocopier. As-Built Drawings larger than A3 sized shall be provided as a paper copy and also produced in the form of black lines on a durable translucent film from which further paper prints can be taken by others as required. In addition drawings shall be provided as an AutoCAD software copy in editable form in Compact Disc (CD) in two sets.
109. Other related information such as Technical Proposal as per clause 3.16.5 and Section 6 - Technical Schedule but not limited to, shall be provided in hardcopy as well as editable softcopy format (Microsoft Word, Excel, Access, or Project).
110. The work shall comprise the provision of abstraction, conveyance & treatment process for 90MLD/135 MLD (output of WTP) raw water abstractions in 23 hours, for Intermediate stage & ultimate stage respectively from Intake well and to provide 90 MLD treated water for intermediate requirement of specified quality

under all-weather flow condition, and distribution of 90 MLD treated water in intermediate stage with 23hour continuous run through transmission networks in the Project area.

6. CONSTRUCTION ACTIVITIES

6.1 PART A: INTAKE WORKS

(i) General

111. Intake well and other intake structures to be constructed at a suitable location in River bank of Ganga.
112. Though Employer found that the tentative location of Intake well on banks of river Ganga 100 m downstream of Vikramshila Bridge, the Contractor shall perform a hydrological study, bathometric survey and analysis to determine: (i) the location of intake structure and (ii) the high and low water intake elevations. The Employer will assist to get the certified 'Ganga River Data' from the Central and State Govt. Departments to the Contractor, if required.
113. The hydrological study, past history, fluctuation of WL, receding character and silt deposition to be conducted by the Contractor, shall recommend the pinpoint location of intake well/s designed for abstraction of requisite quantity of raw water under all-weather condition throughout the entire design period (up to 2047). The recommended pin pointed location of Intake well/wells on the basis of above study will need to be vetted by any of the IITs and finally accepted by the Employer's Representative prior to the start of construction on this structure.
114. The major components of Intake works & raw water pumping station shall comprise the following but shall not be limited to:

(ii) Civil Works

- a. Approach channel
- b. Constructed channel
- c. Intake Well
- d. Connecting Pipe
- e. River bank protection work
- f. Jack well and pump House
- g. Approach road, internal roads, path ways & associated sewerage & drainage
- h. Electrical substation
- i. Administrative building with PLC room, battery room etc.
- j. Sub-station building
- k. Transformer yard
- l. Cable trench/ duct
- m. Compound walls with barbed wire protection

(iii) Mechanical works

- a. Vertical turbine pumps of requisite capacity as per approved design with motors and other accessories.
 - b. Intermediate Impellers & wearing rings for all pumps if required.
 - c. Raw water pumping machinery
 - d. EOT crane
 - e. Gantry arrangement
 - f. Chain pulley block
 - g. De – silting & dewatering pumps
 - h. Intake gates & screens
 - i. Lubricating (force lubrication of pumps) and cooling water system with all accessories
 - j. Discharge pipes and necessary supports.
 - k. Ventilation system for pump house and electrical room
 - l. Fire extinguishers
 - m. Dewatering cum scouring pump with accessories
 - n. Stand pipe
 - o. Erection, installation, trial run & commissioning of the mechanical work
- (iv) **Electrical works**
- a. 33KV outdoor substation consisting of lightning arresters, current transformers, voltage transformers, dis-connectors, fuses, insulators, ACSR conductor, clamp and connectors with necessary metering and protection arrangement including steel structure.
 - b. 33KV indoor switchboard consisting of two VCB incomers with line PT, one VCB bus-coupler and two VCB outgoing feeders with necessary metering and protection arrangement.
 - c. 33/0.433KV, Dyn11, ONAN transformers with OLTC and RTCC panel
 - d. Laying of 33kv dedicated line from barai to intake well
 - e. All sizes of cables
 - f. Neutral grounding resistor on 0.433KV side
 - g. 0.433KV indoor switchboard with necessary metering and protection arrangement
 - h. 0.433KV capacitors
 - i. Soft (reactance) starters for 0.433 KV motors
 - j. LV Switchboard/ distribution board/ lighting panel
 - k. Battery, battery charger and DCDB
 - l. HV, MV and LV cables
 - m. LV capacitor with APFC panel

- n. Local/ remote push button stations
 - o. Lighting system
 - p. Cabling system with cable trays
 - q. Earthing and lightning protection system
 - r. Compound illumination (High Mast & Street lighting)
 - s. Safety equipment
 - t. Fire fighting
 - u. Internal telecommunication
- (v) Instrumentation, Automation and Control System (SCADA)
- a. Level measuring system and level switch for jack well.
 - b. Temperature scanner for motor winding and bearing temperatures and pump bearing temperatures for each pump-motor set.
 - c. Measurement system using transmitter for measuring pressure in the pumping main.
 - d. Pressure gauge in the discharge of each pump.
 - e. Flow meter, level transmitters, flow transmitters etc.
 - f. Flow switches and sight flow glasses for monitoring flow in each motor and pump bearing cooling water return lines, if any.
 - g. Portable sound level meter
 - h. Portable vibration meter.
 - i. Pressure switch on pumping main
 - j. PLC based instrument control panel with all necessary hardware and software for monitoring and control of the pumping station. The PLC shall be provided with all hardware and software for interfacing with the local PC based SCADA system.
 - k. Battery and battery charger for the I&C system
 - l. PC based local SCADA system with all necessary hardware and software and uninterruptible power supply (UPS) system.
 - m. Instrumentation and control cables.
115. The intake well gates are to be provided in 2 levels to draw river water, at high, and low seasonal water levels. The jack well pump house structure is to be designed to house vertical turbine pumps for pumping raw water requirement for Intermediate stage and additional space for Ultimate stage. The intake structure shall be designed for 141m³/d with raw water abstraction in 23 hours and constructed to meet the requirements of Ultimate stage.
116. The scope of work for the intake structure with raw water pump station, along with the associated power system, includes the detailed design, construction of all structures, manufacture and factory testing of equipment, preferably from approved vendor list delivery to the site, unloading, storing, complete erection, setting to work, trial runs, pre-commissioning and commissioning of all related mechanical, electrical and instrumentation equipment. The scope includes operation and

maintenance of these systems including clear water transmission system for storage reservoir.

i. Raw water Pumping main

117. The Design of Raw water pumping shall be prepared by Employer and shall be handed over to contractor for laying the main. However the contractor has to design the road crossings, culvert crossings, Rail way crossings, cathodic protection , surge protection arrangement with required soil bearing capacity test etc. No additional rates shall be paid to the design work and shall deemed to be included in the rates specified by the contractor. Raw water pumping main of 1321mm (O.D) MS pipes, 12 mm thick plate (Indicative, Contractor to verify) is proposed to be laid from intake to WTP at Barari water works in Bhagalpur. The primary settling tank is located at WTP near Barari water works at about 2500 m from proposed intake and will be operated especially during monsoon period when the turbidity of water is high. When water contains low turbidity, the PST will be by passed and water will be directly pumped to Sedimentation Tank of WTP.
118. The alignment survey along the pumping main is carried out .
119. From the visual inspection, it is observed that soil along the proposed alignment of pumping main is of corrosive nature due to the presence of ground water and vegetation growth. In the underground section of pipe line, external soil side corrosion will take place and thus impressed current cathodic protection (CCP) system will be required including temporary cathodic protection. The soil resistivity survey shall be carried out by 4 pin wenner technique.
120. Details of raw water main are summarized in table below (All data are indicative, contractor to verify).

Table 4: Details of Raw Water

	Description	Unit	Dimension
A.	Pipeline outer diameter	mm	1321 (as per IS 3589)
i	Plate thickness	mm	10
ii.	Internal lining	mm	Epoxy
iii.	Pipe material laying length	m	2550
B.	Appurtenances		
iv	Flow meter type		Electro-magnetic flow meter
v	Size	mm	1300
vi	Flow control valve type		Butterfly valve with actuator
vii	Size of valve	mm	1200
Note: Manufacturing, providing, transporting, rolling, lowering layout and joint testing, including all specials, commissioning of SAW(Sub-merged Arc Welded) MS pipes (Fe-410 grade) conforming to IS 3589-2001 with latest amendments.			

	Description	Unit	Dimension
	Providing internal "Epoxy" coating (406 micron, Factory lined) as per clause 16.1 ANNEX- B of IS 3589-2001 with latest amendments.		
	Providing external anti-corrosion coating topipes preferably by using 3 layer side extruded polyethylene (3LPE)coating conforming to DIN-30670 for steel pipes and fittings.		

- a. Line valves
- b. Air valves
- c. Washout valves
- d. Electromagnetic flow meter
- e. Flow control valves with actuator
- f. Water hammer control device
- g. Thrust blocks
- h. Anchor blocks
- i. Pedestal/ saddles (MS/Concrete)
- j. Hydraulic testing, UT, RT, Holiday Test, Peel test etc.
- k. Temporary & permanent Cathodic Protection with CP station
- l. Trenchless technology for crossing the existing major road/storm drain &nallah etc.
- m. Setting of works, laying and jointing of pipes and pipe appurtenances at required levels,
- n. Providing, testing and installation of flow control valves with actuator, electromagnetic flow meter and sluice valves for scouring.
- o. Providing, testing and installing all materials such as bends, tees, reducers, expansion joints, dismantling joints, insulating joints, rubber rings, flanges, nuts and bolts, rubber sheets etc. of required specifications for the installations.
- p. Excavation for trenches in ordinary soil/ hard dense soil/ hard dense soil mixed with boulders/decomposed rocks/hard rock/saturated soil done through manually or by using mechanical equipment.
- q. Provision of necessary bedding to the pipeline as per design and specifications.
- r. Laying and jointing of pipeline including lowering, placing at proper alignment, cutting pipes, champhering and welding pipe ends complete in all respects.
- s. Back filling of trenches with selected material in layers duly compacted to required density by use of mechanical means.
- t. Construction of required structures to cross, drains, nalla, rivers, canals etc. above or underground. Providing U/s and D/S cut-off walls with apron, when the pipe is laid below ground in a nalla, river, drain, in front of a road culvert, canal etc. where the soil cover may erode due to flow.

- u. Providing anchor blocks where necessary especially when pipes are to be laid in submerged condition
 - v. Providing support structures such as saddles, portal frames, ring girders etc. where the pipe is to be laid above ground.
 - w. Providing thrust blocks at vertical and horizontal bends as per design and site conditions
 - x. Providing chambers with drainage pits platform, ladder, ventilation and manhole covers with locking arrangement for butterfly valves, scour valves, flow meters and air valves
 - y. Providing and installation of electrically actuated 1200 mm D/F butterfly valve for isolation with dismantling piece with bypass of 400 mm size with manually operated Sluice valve
 - z. Providing and installing one no. flow meter of 1300 mm diameter in the raw water pumping main. RCC chambers with indicator room above shall be provided for the flow meters.
 - aa. Providing and installation of Temporary & Permanent Cathodic protection system for buried pipes.
 - bb. Providing RCC slab type culvert/ box culvert at road crossing to underpass the pipeline.
 - cc. Designing and providing surge protection system
 - dd. Pipe supports and river/nalla/drain training works at crossings of natural drains/nalla.
 - ee. Provision of necessary expansion joints, air breakers etc required for pipeline
 - ff. To protect, repair and rehabilitate damaged pipelines, electrical poles, telephone poles and providing suitable structures for crossing the existing oil/gas mains/ other rising mains during laying raw water mains
 - gg. Sectional hydraulic testing of the system.
 - hh. Trial run & commissioning of the system
 - ii. Hydro-testing pipes shall be carried out 1.50 times of the working pressure (IS 3589)
121. The scope of work for the raw water pumping main along with the allied works includes detailed design & drawings, construction of structures, manufacturing & factory testing of the equipment, delivery to the site, unloading, storing, complete erection, trial run, pre-commissioning & commissioning, The scope includes operation & maintenance of the system in accordance with the respective subsection.

6.2 PART B: TREATMENT PLANT

ii. Water treatment plant

(i) Unit processes & services

122. The scope of work in WTP includes but is not limited to:

- Preparation of treatment process design, hydraulic flow chart, equipment design,
- Preparation of general arrangement drawings and architectural designs, followed with structural designs and working drawings of all units & buildings after approval.
- Submission of design of electro mechanical equipment, pumping machineries equipment data, catalogue, drawings and specifications for approval
- Construction of all components after approval of designs and drawings including supply and erection of electromechanical equipment as following but not limited to:
 - Settled water pumping system
 - Aeration (Ultimate stage requirement)
 - Inlet channel (Ultimate stage requirement)
 - Raw water flow measurement (Ultimate stage requirement)
 - Pre-chlorination (Ultimate stage requirement)
 - Chemical dosing system (Ultimate stage requirement)
 - Flash mixing (Intermediate stage requirement)
 - Coagulation, addition & flash mixing (Intermediate stage requirement)
 - Flocculation and clarification by plate settlers (Intermediate stage requirement)
 - Rapid gravity filtration (Intermediate stage requirement)
 - Sludge processing & disposal (Intermediate stage requirement)
 - Backwash water tank (ultimate stage requirement)
 - Utility service water (Ultimate stage requirement)
 - Silt disposal of pre settling tank
 - Chemical house, chemical storage (Ultimate stage requirement), Chemical dosing system (Intermediate stage requirement)
 - Sub-Station building and cable trench, cable duct etc.- (ultimate stage requirement)
 - Chlorination building, chlorine storage space, safety measures (Ultimate stage requirement) chlorine tonners, chlorine dosing units (Intermediate stage requirement) chlorine gas absorption system (Intermediate stage requirement)
 - Water testing laboratory & test apparatus, equipment, chemicals, reagent (Intermediate stage requirement)
 - Instrumentation and automation and control system of the plant up to SCADA (Intermediate stage requirement)
 - Administrative building with suitable water supply and sanitation facilities (Intermediate stage requirement) with conference room, PLC room & battery room general lighting and ventilation (Intermediate stage requirement)

(ii) Civil & associated works for

123. Structure for above mentioned processes under:

- a. Piping & conveyance system(Ultimate stage requirement)
- b. Water treatment plant internal roadways & associated sewerage & drainage(Ultimate stage requirement)
- c. Land reclamation (Ultimate stage requirement)
- d. Compound wall(Ultimate stage requirement)
- e. Approach road & associated drainage works(Ultimate stage requirement)
- f. Electrical sub-station including transformers(outdoor) and indoor units(Intermediate stage requirement)
- g. Electrical power & control & instrumentation system including internal yard lighting (Intermediate stage requirement)
- h. Mechanical system(Intermediate stage requirement)
- i. Mechanical, electrical & chemical building services
- j. SCADA systems(Intermediate stage requirement)
- k. EPABAX (telephone system)(Intermediate stage requirement)
- l. Landscaping/arboriculture.(Intermediate stage requirement)
- m. Guard rooms(Intermediate stage requirement)
- n. Godown(Intermediate stage requirement)
- o. Weighing bridge (30 MT capacity/computerized)(Intermediate stage requirement)
- p. Firefighting system(Intermediate stage requirement)

(iii) Clear water reservoir & pumping station

124. The work shall comprise the provision of clear water reservoir, chlorine contact chamber, pumping station & electrical mechanical works including LT substation. It shall comprise the following but shall not be limited to:

- Civil works (Ultimate stage requirement)
 - pump house
- Mechanical works(Intermediate stage requirement)
 - Clear water pumping machineries
 - EOT crane (15 T capacity)
 - Valves & fitting(Ultimate stage requirement)
 - Supply and installation of electromagnetic digital flow meter in clear water pumping main
 - Supply and installation of fire extinguishing equipment
 - Wash water sump& wash water pumping machineries
 - Providing surge protection device in clear water pumping main

- Electrical works(Intermediate stage requirement)
 - LT substation for clear water pumping & WTP requirement
 - Internal electrification
- Instrumentation, atomization& control system(Intermediate stage requirement)
- Supply and installation of digital electronic flow meters at inlet pipe of reservoirs (to be compatible with Local SCADA)
- Supply and installation of water level indicators (digital compatible with local SCADA in reservoir sites)

125. The scope of work for the clear water reservoir & pumping machinery & allied works includes detailed design & drawings, construction of structures, manufacturing & factory testing of the equipment, delivery to the site, unloading, storing, complete erection, pre-commissioning works, trial runs, The scope includes operation & maintenance of the system in accordance with the sub section.

(iv) Transmission Network

- a. The Design of Clear water rising main shall be prepared by Employer and shall be handed over to contractor for laying the main.However the contractor has to design the road crossings, culvert crossings, Rail way crossings, surge protection arrangement with required soil bearing capacity test etc. No additional rates shall be paid to the design work and shall deemed to be included in the rates specified by the contractor.The scope of works for the transmission system along with the allied works includes network designs with the use of Water GEMS software
- b. Structural design and drawings for crossing drain, river / nala, railway tracks etc. Including provision for trenchless technology as required
- c. Structural designs of various chambers as per the standard drawings enclosed
- d. Design and drawings for thrust blocks at bends, tees, tapers and dead ends, anchor blocks, anti-floatation arrangement / blocks.

126. The transmissionnetwork shall comprise the following but shall not be limited to:

- Supply and laying of DI-K9 pipes varying from 100 mm to 1000 mm diameter with internal cement mortar lining and 75 micron thick external zinc with bitumen coating as per specifications.
- Supply and installation of pumping machinery for Phase-I demand (year 2032) for pumping station proposed in the transmission system.
- Water hammer control device / devices with required valves etc.
- Line valves
- Air valves with isolation valves
- Washout valves
- Pressure reducing valves
- Thrust blocks
- Anchor blocks
- Anti-floatation arrangements / blocks

- Railway line road crossings with trenchless technology by jacking and pushing method including storm drains crossings etc
- Setting of works, laying and jointing of pipes and pipe appurtenances at required levels,
- Providing, testing and installing all materials such as bends, tees, reducers, expansion joints, dismantling joints, insulating joints, rubber rings, flanges, nuts and bolts, rubber sheets etc. of required specifications for the installations.
- Excavation for trenches in ordinary soil/ hard dense soil/ hard dense soil mixed with boulders/decomposed rocks/hard rock/saturated soil by manual and mechanical means.
- Provision of necessary bedding to the pipeline as per design and specifications.
- Laying and jointing of pipeline including lowering, placing at proper alignment, cutting pipes as required, complete in all respects.
- Back filling of trenches with selected material in layers duly compacted to required density by use of mechanical means.
- Construction of required structures for crossings of railway tracks, culverts, drains, nalla, rivers, etc wherever required. Providing U/s and D/S cut-off walls with apron, when the pipe is laid below ground in a nalla, river, drain, in front of a road culvert, canal etc. where the soil cover may erode due to flow.
- Providing anchor blocks where necessary
- Providing support structures such as saddles, portal frames, ring girders etc. where the pipe is to be laid above ground.
- Providing thrust blocks at vertical and horizontal bends as per design and site conditions
- Providing chambers with drainage pits platform, ladder, ventilation and manhole covers with locking arrangement for sluice valves, butterfly valves, scour valves, bulk flow meters and air valves etc
- Providing RCC slab type culvert/ box culvert at road crossing to underpass the pipeline.
- Pipe supports and river/nalla/drain training works at crossings of natural drains/nalla.
- To protect, repair and rehabilitate damaged pipelines, electrical poles, telephone poles and providing suitable structures for crossing the existing oil/gas mains/ other mains during laying transmission network pipelines
- Road re-instatement
- Sectional hydraulic testing of the system.
- Trial run & commissioning of the system
- Operation and maintenance of the system for the period of 10 years including cost of supply of all materials, equipment etc.

6.3 SCADA

127. Under the works component of the Contract, bulk flow and pressure measurement devices shall be installed to monitor water distribution at the following locations:

- At Intake well, jack well, all the pumping stations and WTP components
 - Flow at delivery pipe of component.
- At 19 storage reservoirs (both ground level reservoirs and overhead tanks):
 - Flow in incoming mains;
 - Flow in outgoing mains in all the branches at SR location
 - Water level at all the components
 - Pressure in raw water main, transmission main and in all the component
 - All the outlet of the Service Reservoirs which are going to DMA shall also be connected to the SCADA System to monitor the out flow of water in all the branch of the Distribution system

The Contractor shall design and install a Supervisory Control and Data Acquisition (SCADA) system that shall meet the following objectives:

- Data acquisition at all bulk flow meters installed at jack well, settled water pump house, clear water pump house and at all the components of the water treatment plant and at all water level indicators installed at storage reservoirs .
- Data acquisition for operation of machinery and pumping machineries installed at intake well, jack well, WTP, settled water pump house and clear water pump house.
- Data acquisition at customer service connections shall not be included
- A telemetry system to send the acquired data to a centrally located supervisory system, including adequate security systems.
- A supervisory (computer) system with adequate back-up facilities to gather the acquiring data, format it for use by a SCADA operator and to feed a Historian (Database Management System).
- Remote control operation of control valves is included in the scope of this Contract.
- The SCADA system shall be synchronised with the SCADA provided in the Bhagalpur water supply System (BWSP01).
- The SCADA system shall allow for upgrading to include remote control in the future.

128. The Contractor shall provide computer hardware and develop software for SCADA data analysis and reporting that shall meet the following objectives:

- Daily and monthly water production at each of the pumping stations in the system.
- Daily and monthly water balance for each water production, transmission and storage sub-system.

- Hourly and daily water balance of each storage reservoir, presenting inflow, water level fluctuations and outflow at each reservoir.
 - Hourly pressure logs at critical measuring points at raw water main, transmission main and WTP components.
 - Graphic presentation of all the above.
129. Further requirements are provided in the Technical Specifications Part 2. The Contractor shall submit its proposed SCADA system as part of its Operations and Maintenance Plan for approval by the Employers Representative .
130. The SCADA system shall be implemented step-wise following the completion of the relevant components of the Works. The SCADA system shall be fully operational at the completion of the entire Works.
131. The Contractor shall train BMC staff in operating the SCADA system and related software.

6.4 PART C: OPERATION AND MAINTENANCE

132. Operation and Maintenance (O&M) of all Civil structures, pipe lines & EMI works up to SCADA – All units of intake works, raw water pumping station, raw water pumping main, all units of WTP and Transmission networks for a period of 10years.
133. The details of the activities to be performed is specified here under or anywhere of the documents :

iii. Technical standards and regulation to be followed

134. Except where otherwise specified, plant, materials and workmanship shall comply with the requirements of the relevant Indian Standards (hereinafter referred to as IS) issued by the Bureau of Indian Standards. Other equivalent National or International Standard Specifications such as those issued by the International Organization for Standardization (ISO) or the International Electro technical Commission (IEC) may be substituted by the Contractor (so long as they are more stringent than the equivalent IS) at the sole discretion of the Employers Representative or as may have been agreed in the Contract. All standards used shall be the current version.
135. The electricity installation shall comply with all relevant statutory regulations and standards current at date of bids, unless otherwise indicated within the Employer's Requirements. Electrical installations shall where relevant be in accordance with the Indian Standards Code of Practice for Electrical Wiring Installations IS 732.
136. All materials and workmanship not fully specified herein or covered by an approved standard shall be of such kind as is used in first class work and suitable to the climate in the project area.
137. Where the requirements of any such standard specification or regulation conflict with the requirements of the Employer's Requirements or any item on the Drawings, then the Contractor should refer to the Employers Representative for clarification before proceeding with that section of the Works.

138. If Relevant BIS standards are not available then at the discretion of the Employer, Contractors will be allowed to use international standards such as AWWA/DIN/JIS/BS.
139. Ministry of Road Transport & Highway (MORTH), Government of India Specifications for Roads and bridge works and relevant IRC specification should be followed for relevant items.

iv. Submittal & sample of materials

140. Vendors, suppliers of all construction materials including samples, test reports of samples required to be submitted for approval. Samples of materials requiring prior approval, such as cement, aggregates, asphalt cement, building specialties, and backfill materials, in large enough quantities (at least 0.1 m³ each) with descriptive data shall be furnished by the Contractor to the Employer's Representative. Samples shall be submitted at least 14 days before their proposed usage in the work to permit inspection and testing. The samples shall be properly marked to show the name of the material, name of the manufacturer, applicable Specification.
141. Only upon approval by the Employer's Representative, shall the materials be brought to site. Samples once approved shall be on exhibition at all times, properly stored and prevented from deterioration for the purpose of comparison with the materials brought to site of work from time to time for use in the work.

v. Trial Run of the System

142. After execution of the works, the Contractor shall make trial runs of the individual components. A continuous operation of each component for a period of 30 days for intake, WTP, clear water pump house and 30 days in case of the transmission networks of each sub-zone, to the satisfaction of the Employer's Representative will be deemed to demonstrate satisfactory completion of the trial run for that individual component. The cost of electricity, chemicals and other consumables for operation and maintenance of the system during the period of this trial run will be borne by the Contractor. The costs associated for the Contractor's and other operating non-Employer personnel during the period of the trial run, along with costs of tools and spare parts, which are required for operation and maintenance of the plant and equipment during the trial run period shall also be borne by the Contractor and shall be included in the Contract Price.
143. In the event that any system or facilities do not satisfactorily achieve the required performance standards during this period, the trial run period shall be extended until such time as the Contractor has satisfactorily rectified any deficiencies as may be necessary to satisfy the performance requirements, at the risk and cost to the Contractor.

vi. Taking over by Employer

144. On completion of the trial run, pre-commissioning of the system shall be performed by the Contractor. The total time allotted for pre-commissioning (i.e., running of entire plant at optimum efficient) shall be of 30 days minimum, before the system is deemed ready for commissioning. In case of transmission system, this period shall be 30 days minimum. The commissioning of any system shall be considered as

fully achieved after the entire system has run continuously for a period of 30 days without any breakdown to the satisfaction of Employers Representative . If a continuous run is not achieved fully to the satisfaction of Employers Representative , the Contractor has to complete the required repairs and modifications required to achieve the same at his cost. All the costs thereof, including the cost of the electricity, Contractor's personnel, maintenance, and any consumables for operation and maintenance of the system during the period pre-commissioning period shall be borne by the Contractor.

vii. Taking over by employer

145. On completion of pre-commissioning, commissioning of the system will start when completion certificate will be issued. All the cost of personnel, chemicals (alum, lime, chlorine and polyelectrolyte, etc.) maintenance, and other consumables for operation and maintenance of the system, except electricity consumed, shall be borne by Contractor. The cost of electricity will be borne by employer. From this date of completion certificate the period of 10 years for O&M of the system will start at the same time the Retention Period will start for 365 days

viii. Operation and Maintenance

146. After taking over by employer, the assets created will be handed over to the contractor for operation and maintenance. The Contractor shall be responsible for Operation and Maintenance of the system as per part of the contract, along with spares as on required basis for the period of 10 years from the date of commissioning. Notwithstanding the above, the Contractor shall be required to rectify any deficiencies which are attributable to defects in the workmanship or quality of materials, plant or equipment during the Contract Period. The list of spares required for further 10 years as per manufacturer's specification shall be provided by the Contractor.
147. The schedule for completion of works, trial run commissioning and Operation and Maintenance:
- Time limit for completion of works - 30 months
 - Trial run - 30/30 days after completion of work,
 - Defect liability period - 1 year from date of commissioning
 - Operation and Maintenance - 10 years from date of commissioning.

The 1 year defect Liability period is included in operation & maintenance.

ix. Facilities, Details and Data Made Available by the Employer (During Construction Period)

(i) Facilities Available to the Contractor

148. Spaces and Accommodation: The Contractor will be allowed to use the space available, which will not be occupied by any permanent facilities, after permission of the Employer's Representative. The Contractor will be free to use it for establishing his offices, laboratories, storage spaces and workshop as long as they do not interfere with the layout of the works to be carried out under the Project.

149. The Contractor will have to hand over the spaces and structures in a clean and intact condition at the end of the Contract or at an intermediate stage when they may be required by the Employer's Representative on demand after one month notice.
150. There will be no charge for the use of such space. The Employer however does not undertake to provide any additional space or accommodation that the Contractor may require to fulfil his contractual responsibilities. The Contractor will be responsible to arrange the same at his own cost. The Employer may assist the Contractor in making his arrangements by giving suitable recommendation letters.
151. Contractor shall arrange at his cost for the space required for storage of the pipes, specials and valves supplied for transmission networks along with its watch and ward.

(ii) Details and Data Available to the Contractor

152. The Employer has collected the details and data and has used these in the formulation of the bid elements. They are listed below and are given in the supplementary information subsection. The Employer does not guarantee either the sufficiency or accuracy of the data provided, and the Contractor will be wholly responsible to carry out confirmatory additional surveys, soil investigations, specific testing, and all other tasks necessary for proper planning and detailed design. In case of discrepancies found requiring modifications to the provisions given in the subsequent subsections, the Contractor shall be required to provide full details of the investigations and analysis for approval by the Employer's Representative.
 - a. Topographical surveys conducted and have also established bench marks.
 - b. Subsoil Investigations.
 - c. Water quality analysis of raw water in the Ganga River.
 - d. The water level variations of the Ganga River.
 - e. Transmission network drawings with standard drawings for chambers, booster pumping stations
 - f. Transmission network design details "carried out through Water GEM software"
153. Contractor shall be responsible to carry out surveys, which are required for design of the project components and not furnished in the document, at his own cost and responsibility.

6.5 REPORTS AND DOCUMENTS TO BE GIVEN BY THE CONTRACTOR

c. Inception Report

154. Immediately after acceptance of offer, the Contractor is supposed to submit Inception report explaining his methodology and measures to complete the work in stipulated time. This will include work sequence, staff deployment, their roles and responsibilities, material procurement plan, quality assurance plan, safety plan, maintenance management for 10 years, training to Employers, staff and all other related features.

a. Progress Record

155. Contractor should maintain the daily progress record of the work in form of daily performances, photographs and video films periodically (weekly) and especially during the important activities such as piling, foundations, major and important concreting, sinking operation of well, hydraulic testing of the pipelines and visits by VIPs and inspecting authorities. Weekly & monthly progress reports for all sorts of works along with detailed planning, program & performance achievement reports on Procurement, Engineering, Construction & Commissioning etc. shall be submitted by the contractor to the Employer before end of the week or end of the month; so that weekly and monthly review meeting could be conducted on the basis of the progress report/s. Copies of such reports, photographs and recordings etc. should be submitted to the Employer; cost of these shall be included in the offer.
156. Contractor or Contractor's representative/s (not below the rank of Project Manager) shall attend & present progress report/s of the project in each weekly & Monthly progress Review Meeting with furnishing all data, reports etc. and provide all queries of the Employer as and when required.

b. Quality Assurance(separate chapters)

157. The Bhagalpur Water Supply Project stresses to achieve the highest standards for the works (construction, equipment supply and erection). All the materials procured for this project shall be tested in NABL accredited Lab to assess the quality of the material and the materials shall be utilised only if it pass in test to satisfy the Is and specification mentioned in the Bid. A Quality Assurance/Quality Control (QA/QC) Manual is outlined in relevant section, which details the minimum level of testing and control to be exercised for ensuring the quality of the completed works. The minimum measures taken by the Contractor shall be as per the QA/QC Manual and these specifications but not limited to it. The Contractor shall prepare a detailed plan for this Contract for Quality Assurance and Quality Control and have it approved by the Employer's Representative. The Contractor shall deploy an adequate number of suitable staff whose sole responsibility shall be to strictly implement the QA/QC Plan and conduct necessary tests to ensure the highest quality standards are being met. All other measures that the Contractor may feel necessary or as may be directed by the shall also to be followed.
158. The other subsection gives details of the proposed Quality Assurance and Quality Control scheme to be followed in this Project. It covers the inspections of construction material, manufacture and supply of equipment and of the works to be carried out.

FIELD LABORATORIES

159. The Contractor shall be required to establish a field laboratory (location can be at the Water Treatment Plant Site or as approved by Employer's Representative) suitably equipped to carry out tests as stipulated in the QA/QC Manual. This laboratory shall include all specialized equipment which will be required for field testing of the materials (soils, concrete mixes, etc.) and equipment being supplied under the Contract. The laboratory shall be manned by suitably trained staff which

will utilize computerized record keeping. The minimum equipment to be provided in the laboratory shall be in accordance to guidelines in QA/QC manual. Any additional equipment deemed necessary to perform the testing specified in other subsections of this document shall be furnished by the Contractor at no additional cost to the Contract.

160. Facility for testing and repairs of the flow meters for property connections provided to the domestic and commercial consumers shall also be provided in the laboratory with adequate space in addition to the requirements for Intake, WTP works.
161. In addition to the equipment in the laboratory, the Contractor will also provide field testing equipment as directed by the Employer's Representative on the various sites where work is in progress.
162. Weekly & Monthly reports on QA/QC for all tests shall be submitted by the contractor without any additional cost.

6.6 WATER QUALITY

163. The contractor shall supply water with the following minimum criteria and residual chlorine level of 2 ppm at the Service Reservoir inlet as prescribed by the CPHEEO norms
- 1) pH 6.5 to 7.5
 - 2) Turbidity
164. Residual chlorine 2 ppm at Service Reservoir
- 1) Bacteriological Examination – No Pathogens
 - 2) Any other factor during the operation period raised by the client
165. The Contractor shall collect all water samples relative to the system required by Applicable Law and undertake physical-chemical and bacteriological analysis and provide and submit in a timely manner all such test results to the Employers Representative .
166. The Contractor shall propose its water sampling and analysis program as part of the Operations and Maintenance Plan. The program shall allow adequate monitoring of water quality and shall meet the minimum sampling and analysis frequencies as specified below.

location	Physical&chemical parameters	bacteriological parameters	Heavy metals & pesticides	residual chlorine
At Inlet of the WTP	Daily	weekly	annually	not applicable
At Clear water Reservoir after treatment at WTP	Daily	Daily		Daily 3 samples
at all reservoirs	Daily	Daily	-	Daily

167. The Employer's Representative may require the Contractor to take samples on behalf of BMC for the purpose of allowing the BMC to review the testing and laboratory analysis programs of the Contractor.
168. The Contractor shall assist and advise the BMC in all matters related to water and quality including, but not limited to, providing advice and assistance during the BMC's discussions with the regulators and public health officials on water quality matters.
169. The Contractor shall equip and operate, from the Operation Service Commencement Date, at his cost a laboratory in space available at the Barari Water Works compound. The laboratory shall have all testing and support equipment to allow for testing of water samples on all parameters as listed in Section 8 [*Particular Conditions of Contract*], Chapter 5 [*Treated Water Quality*] throughout the duration of the Operation Services at Contractor's cost. The Contractor's obligations include the supply of chemicals and the renewal of apparatus if so required

c. Pre-shipment Inspections outside the Employer's State

170. In the event the Contractor proposes to procure material which requires pre-shipment (factory) inspection by the Employer's Representative from outside of the Employer's State (Bihar), the Contractor shall arrange and provide for the cost of the travel to the Manufacturer's site, including accommodation, local transport and food for two (2) Representatives of the Employer. Such costs will be incorporated into the tendered cost of such items and no additional payments will be made afterwards.

d. Operation and Maintenance Manuals

171. The Contractor, before commencement of the Tests on Completion, shall submit six (6) copies of the Operation and Maintenance (O&M) Manuals for the intake and raw water pump station, raw water pumping main, water treatment plant, pumping equipment, power supply systems including overhead lines, pump stations and the clear water reservoir, Transmission system in the English language. Each O&M Manual shall contain descriptions, illustrations, sketches, layout drawings, sectional drawings, sectional arrangement views and manufacturer's spare part numbers to enable the connection, functioning, operation and maintenance of all components.
172. The Operation and Maintenance Manual shall also include the following:
- a. Technical data of all equipment and their performance.
 - b. Instructions for servicing and overhauling.
 - c. Particulars of lubricating oil and grease to be used, also alternative indigenous commercial lubricating oils suitable for use.
 - d. Performance curves for all units regarding efficiency loading and output.
 - e. Performance curves for the motors.
 - f. List of tools mounted on wall panels.
 - g. List of spares provided in the spare box.
 - h. Spare parts list, with manufacturer's part numbers.

- i. Operator's log.
 - j. List of the photographs of the plant and machinery as fabricated by the manufacturer.
 - k. Procedures for maintenance.
 - l. Preventive maintenance procedures for all the equipment.
 - m. Emergency maintenance management of the plant and equipment.
 - n. Addresses and contact numbers of nearest dealers.
 - o. Routine periodical maintenance schedule.
173. Contractor shall submit the O&M manual 3 months prior to commissioning of the system.

e. Handing over the system

174. The complete system shall be handed over by the Contractor to the Employer at the end of the O & M period. The system has to be handed over with all equipment and systems in a property maintained and fully functional condition. The Contractor will make a full inventory of the items of installations and hand them over, including new replacements for any spare parts or tools that were procured under the contract and used/consumed by the Contractor during the O & M period. All replacement spare parts shall be Manufacturer's original equipment only.

6.7 FACILITIES AND SERVICES TO BE PROVIDED BY THE CONTRACTOR

a. Field Office for the Employer

175. The Contractor shall provide and maintain field office with the following facilities for the Employer and Employer's Representative. The cost for these facilities shall be included in the Contract Price. The field office shall be erected and fully functional prior to any construction work being initiated.
176. It shall be at the Water Treatment Plant site location with a floor area not less than 30 square meters, plus provision of a toilet room. The Contractor will provide the layout of the building within 14 days of the issuance of the Letter of Acceptance and get it approved by Employer's Representative.
177. The office building shall be equipped with minimum office furniture (at least 2 tables with 2 drawers each, 3 chairs on casters, 6 chairs with no casters, 2 drawer A3 size freestanding filing and 2 drawing storage cabinets, and one 1200 mm wide bookshelf. The office building shall be provided with electricity, water and sanitary holding tank, ceiling and exhaust fans, 8 electrical and data outlets and the following equipment:
- 3 PC desktop computers, out of which 1 would be specifically for transmission system works, each with these minimum features: a Windows Office 7 Professional operating system; a 48 cm (19 inch) Colour monitor, a 160 GB hard drive and 4 GB DDR3 RAM at 2.5 GHz; a 512 MB Graphics Card; a 16X max Optical Drive with DVD write capability and internal speakers.

- 1 inkjet printer and 1 no. HP Laser Jet Model printer of A4 size CP1515n, or equivalent
178. The Contractor shall maintain the Employer's office throughout the Contract Period. This shall include furnishing potable water, a broadband internet service, emptying the sanitary holding tank when required and hauling the contents to disposal and providing a nightly cleaning service.
179. The office, as above provided for the Contract and the equipment listed above (bulleted) shall become the property of the Employer.

b. Local Offices for the Contractor

180. The Contractor shall set-up a field office at the Project Site for supervision of the works prior to any construction work being initiated.
181. The Contractor shall make the office functional prior to starting work at the site. The office shall have all required furniture, computers, printers, plotters and other office features required for carrying out the work. It shall house a design team of qualified personnel. The office shall also have a conference room, suitable for 8 attendees, for discussions and reviews.
182. The Employer requires a high level of input for the initial investigation and design phase and requires the Contractor to be prepared with all necessary inputs so as to not lose time at the beginning of the Contract. These activities include the approval of various designs and drawings. It is expected that the Contractor will mobilize the necessary manpower of desired expertise and equipment which may be based in this on-site premises.
183. The local office and field testing laboratory should be handed over to employer after completion of the project along with testing equipment.

c. Storage Facilities for the Contractor

184. The Contractor shall provide storage facilities of adequate capacity for storing materials. The storage facilities shall be of such construction to adequately protect the materials against deterioration. A raised platform well above the highest flood level shall be constructed for stacking cement and other consumables. PVC piping, the tube or plate for settlers and other items which will deteriorate from exposure to sunlight (ultraviolet radiation) shall be stored in this facility after being delivered to Bhagalpur and awaiting installation.
185. The storage shed(s) may be located off of the Project Site, as determined by the Contractor, but the contents must be available for inspection by the Employer's Representative at any time. If the storage units are located on the Project Site, they shall be removed prior to the end of the Contract period and shall not interfere with any of the water supply operations. The cost for the storage facilities shall be included in the Contractor's Contract Price.

d. Temporary Water and Electricity Provisions

186. The Contractor shall make his own arrangement for the supply of water and electrical power that will be required for the project for his operations. The cost for

the temporary water and electricity services shall be included in the Contractors Contract Price.

187. The supply of pressurized piped water will not be available. The Contractor shall make arrangements for supply of drinking water and non-potable water required for construction work by trucking it in or by sinking tube wells or other suitable alternatives. The Contractor shall investigate this matter before the submission of Tenders.
188. Temporary Sanitary Provisions
189. The Contractor shall make his own arrangement for sanitary (toilet) facilities for his workmen and other staff. The cost for pumping out holding tanks and disposal of the wastewater off-site at an approved facility shall be included in the Contractors Contract Price. The Contractor shall provide sanitary facilities at each of his work sites for as long as he has staff on stationed there.
190. The Contractor shall also arrange for the collection of trash and construction debris from all work sites, at least twice each week, with disposal at an approved off-site facility by Employers Representative . The burying of trash or construction debris on the work sites will not be allowed.

6.8 HANDING OVER OF PROJECT SITE TO CONTRACTOR

191. The sites will be made available on the date of the issuance of the Letter to Proceed and the Contractor can plan his work accordingly.
192. The Employer will make the individual work sites available to the Contractor so that he will have space available for him to carry out his work ..
193. However, in the event, the Contractor does not have his detailed design approved; it will be assumed that the Contractor does not have any hindrance in progress of work on account of availability of site for construction.
194. In the event that some local obstruction/objection arises which would impede the progress of the Contractor's work in any one area, the Contractor will be required to redeploy his resources to other unaffected fronts in order to maintain the progress of work so that the overall completion of the whole Project is not affected.

a. Completeness of the Work

195. The Contractor shall be fully responsible to ensure that the whole Project (drawing raw water from the Ganga River, treating it and conveying it to the clear water reservoir and pumping station), and water supply to the storage reservoirs through transmission network including Completion of each individual component, are designed and constructed in a manner so that the System as a whole operates as a fully integrated system which is capable of achieving the required output in an efficient and economical manner, and includes all plant, equipment and accessories required for the safe and satisfactory operation of the facilities.
196. The Contractor shall also be responsible for the office building with associated component facilities.

197. To achieve this, the Contractor shall ensure that each individual component performs in a manner which is complementary to that of all other components. Any accessories which are not specifically mentioned in the specifications, but which are usual or necessary for completion of the Works and successful performance of the overall system and facilities shall be provided by the Contractor within the Contract Price.
198. The Contractor shall ensure that his designs are "maintenance-friendly" and that all items of plant and equipment are designed and installed in a manner which will facilitate routine and periodic maintenance operations.

b. Time for Completion of Construction

199. The whole of the Work, including mobilization, reconnaissance, survey, sub-soil investigations, design, manufacturing, transportation, construction, installation of all Electro-Mechanical & Instrumentation (SCADA) units, trial runs, testing, pre-commissioning and commissioning is to be completed within the scheduled Time for Completion. The duration of the Trial Run and testing period is 30/30 days and the Pre-Commissioning period is 30/30 days; both periods are included within the scheduled time for completion.

c. Schedule Milestones

200. The detailed activity scheduling to be done of latest version of project management software such as MS project / prima-Vera and then the milestones arrived at. This scheduling to be submitted along with offer. The material schedule procurement and monthly cash flow statement based on this schedule also to be submitted and will remain open for scrutiny to decide interim payments.
201. The key Schedule Milestones as proposed by the Contractor and agreed upon by the Employer's Representative will be adopted for periodic review of the progress of various components of the overall Project.
202. These milestones will define the stages when the decisions regarding any delay in the implementation will be assessed with a view towards the application of the provisions of the Conditions of Contract.

7. OPERATION AND MAINTENANCE

7.1 SCOPE OF WORK FOR OPERATION SERVICE PERIOD

203. The Contractor shall operate and maintain the entire works under Bhagalpur water supply project briefly for the entire works of Intake, Sub- Station & intake to WTP rising main, Water Treatment Plant, pumping station, transmission mains and all other allied works under this contract. The Contractor shall be responsible to operate and maintain the works for 10 years. The personnel provided by the Contractor shall be fully experienced in managing, operating and maintaining all aspects of the plant and facilities, shall be responsible to monitor and ensure the successful performance of the system throughout the Retention and Operation Service Period.

204. All the costs for operation and maintenance of the works such as manpower, fuel, spares, tools, transportation, disposal of sludge, maintenance of civil, electrical, mechanical pipelines, automation, etc. is within the scope of services of the Contractor. No extra payment other than whatever has been quoted in the bid will be entertained by the Employer. All costs for the Employer's personnel will be borne by the Employer.
205. Cost of electricity shall be borne by the employer as per the specification and guaranteed figures given by the bidder as per liquidated damages specified in this contract.
206. The above notwithstanding, the Contractor will be required to rectify any deficiencies which are attributable to defects in the workmanship or quality of materials, plant or equipment during the Retention Period.
207. The bidder shall also dispose off the sludge and any other material, as per specifications and to the satisfaction of the Employers Representative . Within his quoted cost, the bidder is to ensure that all the functional guarantees are maintained.
208. The bidder shall provide on job training to the employer's staff as per specifications.
209. For this period, the scope of work shall include, but not be limited to the Operation and Maintenance of the all the components designed and constructed under this contract, including campus development, horticulture, service water supply and general utilities.
210. The bidder shall also dispose off the sludge, screenings, grit and any other material, as per specifications and to the satisfaction of the Employers Representative It is to be noted that all costs during the O&M period, excluding the cost of power is to be borne by the contractor. Within his quoted cost, the bidder is to ensure that the following guarantees are maintained:
- Guarantee for quality of treated effluent
 - Guarantee for consumption of chemicals
 - Guarantee for consumption of power
 - Guarantee for automation system
211. The bidder shall, at no extra cost to the employer, repair and re-condition all the electrical and mechanical equipment in the concluding year of the O&M contract to a condition so that they can operate for a further 3 years period with regular preventive and recommended maintenance. The bidder's scope shall include supply of all necessary spares that may be required to operate for another 3 years. The list of critical spares shall be drawn up depending upon the maintenance record of equipment in the penultimate year of the contract and the spares shall be supplied in the concluding year of the contract.

7.2 OPERATION AND MAINTENANCE COST

212. All the cost for operation and maintenance of the project such as manpower, consumable, spares, tools, transportation, disposal of treated effluent, disposal of sludge, disposal from screenings and grit, maintenance of civil, electrical,

mechanical pipelines, automation, etc. is in the scope of the bidder. No extra payment other than whatever has been quoted in financial bid will be entertained by Employer. Cost of electricity shall be borne by the Employer subject to the stated conditions and as per the specification and guaranteed figures given by the bidder in the attachment to the Letter of Bid.

7.3 PART 2.1 - OPERATION SERVICES

213. During the Preparation Phase, the Contractor shall prepare an Operations and Maintenance Plan to be approved by the Employers Representative .
214. Except as provided otherwise in this Contract, the Contractor shall carry out all management, financial and administrative responsibilities required for operating the Bhagalpur Water Supply System (BWSP 02) in a sustainable manner.
215. The Contractor shall provide ongoing assistance and advice to the BMC on all matters related to the water supply system and the water supply services, and any requests for information, advice or reports from the BMC with respect to the facilities or the services.
216. The Contractor shall conduct field inspections and collect data to demonstrate, to the satisfaction of the Employers Representative , that Performance Standards are being met.
217. The Contractor's project organization shall comprise of two departments, a construction department responsible for all Works and an operational department responsible for all water supply operations and maintenance The operational department is to be headed by an operations manager and will comprise of: engineering,). During the entire Operation Phase the Contractor shall operate and maintain the newly constructed water supply facilities. Operations and maintenance will include:
1. pumping and transportation of sub surface water from River Ganga from intake well jack well and to WTP and finally to all the Service Reservoirs;
 2. Dredging of approach channel whenever the silts accumulates in the channel and disposing the sludge ;
 3. Treatment of water and bringing the water into the standards prescribed by the CPHEEO norms for drinking water quality standard.
 4. managing the raw water main to WTP transmission main to Service Reservoirs efficiently and minimizing non-revenue water (NRW);
 5. Supply of bulk potable water to all the Reservoirs at all inlets and outlets branchwise.
218. The Contractor shall regularly inspect the facilities for safety deficiencies. The Contractor shall ensure that the facilities are protected from trespassers, vandals or other parties which do not have the BMC's or Contractor's permission to enter onto the Facilities by providing security for the Facilities. Such security measures must be in place at all times, 24 hours a day, 7 days a week.
219. The Contractor shall maintain all water supply facilities and develop comprehensive maintenance management programs for the facilities; perform day to day repairs to the wells, electro-mechanical equipment, pumping mains, storage reservoirs constructed under BWSP 02, transmission mains, including the repair of leaks, and carry out emergency repairs of large leaks on mains.
220. The Contractor shall update the Operations and Maintenance Manuals on an ongoing basis to reflect any changes to the Facilities. The Contractor shall provide

training to Management and Operations Staff on an on-going basis about the Operations and Maintenance Manuals.

REPORTING

221. The Contractor shall prepare and submit for approval, plans and periodic reports on those plans, progress of Works and Services, performance standards etc., including exceptional reports on emergencies if any. The reporting requirements are provided in Table 2.8.1. The Contractor shall as part of the Construction Plan, the Operations and Maintenance Plan develop the required formats for the periodic reports and also identify any critical reporting requirements in order to enable timely decision making by the Employer.
222. The Contractor shall prepare and submit for approval a Construction Plan, defining and scheduling all Works in Sections 1, 2 and 3. The Construction Plan shall be finalized and approved within two month from the Commencement Date. The Construction Plan shall include:
1. The results of the Design of all the components and its review and verification of the overall proposed water supply system and sub-water supply chains
 2. Proposed construction schedule;
 3. Cash flow requirements;
 4. Format for periodic construction reporting;
 5. First Year Detailed Construction Plan and Budget.
223. The Contractor shall prepare and submit for approval an Operations and Maintenance Plan, defining all operational services to be provided under the Contract. The Operations and Maintenance Plan shall be finalized and approved within 24 months from the Commencement Date. The Operations and Maintenance Plan shall include:
1. The results of water quality survey sampling
 2. Standard Operating Procedures for routine operations and emergency responses
 3. Format for periodic operation and maintenance reporting.
224. With the APB the Contractor will supply all key data of the previous year on operational income and expenditures including kWh electricity consumption – electricity bill; use of chemicals for water treatment / disinfection, number of operational staff with job description segregated over the main O&M functions (pump operation, repair, preventive maintenance,
225. Operation and Maintenance Manuals shall provide the details of the regular and periodic maintenance of Works, and shall ensure that at all times during the Operation Service Period, the Project Facilities are maintained in a manner that it complies with the Performance Standards. Such Operation and Maintenance Manuals shall include but not be limited to the following:
1. Intervals and procedures for the carrying out of inspection of all elements of the Section;
 2. Criteria to be adopted for deciding maintenance needs;

3. Preventive maintenance schedule;
 4. Intervals at which the Contractor shall carry out periodic maintenance;
 5. Intervals for major maintenance and the scope thereof;
 6. Leakage management system;
226. Quarterly Operating Performance Report (QOPR). The QOPR shall include a summary analysis of the quality of water supplied,

Table 2.8.1 Summary of Periodic Reporting Requirements

Deliverable	First Report	Follow-up Tasks
Construction Plan	Submit preliminary draft of Construction Plan with the detailed time schedule as per GCC Clause 8.3 [<i>Programme</i>]. Submit Draft Construction Plan not later than one month from the Commencement Date. The Final Construction Plan should be approved not later than one month from the Commencement Date	To be updated annually
Operations and Maintenance Plan	Submit Draft Operations and Maintenance Plan not later than 3 months from the Commencement Date. The Final Operations and Maintenance Plan should be approved not later than 6 months from the Commencement Date	To be updated annually
Quarterly Operational Performance Report (QOPR)	Submit Quarterly Performance Report for any and every quarter before 20 th day of subsequent quarter commencing from the Commencement Date	Repeat for every quarter including summary analysis of unpaid bills
Annual Operational Performance Report (AOPR)	Submit Annual Performance Report for any and every year before 20 th day of subsequent year	Repeat for every year
Operation and Maintenance Manuals	Submit Manual not later than 9 months after Commencement Date	Complete implementation and training within 2 years from the Commencement Date
Resettlement Plan (RP) and IEE	Update RP and IEE upon change of any design details	To be further updated if any change in detailed designs.

7.4 PERFORMANCE STANDARDS AND MEASURING FRAME WORK.

227. The contract distinguishes two sets of performance standards:

- Target performance standards are performance standards that the contractor shall aim to achieve in order to provide improved levels of water supply services.
- Minimum service levels are the performance standards the contractor is required to maintain at all times;

7.4.1 TARGET PERFORMANCE STANDARDS

228. The Contractor shall adhere to the following Target Performance Standards. The Target Performance Standards will determine the performance related payments. Compliance to the specified performance standard is a pre-condition for receiving a performance related payment. Each performance related standard has a weightage representing the relative importance of that standard in qualifying for a performance related payment. A draft measuring framework is presented in table 7.1.

Table 7.1 Target Performance Standards

Sub-Part No.	Description	Details
4	Operation - Water Production, and Storage	
	Parameter 4.1	Efficiency in water production – Measured the quantity produced and convey to WTP site and finally conveyed to Service Reservoirs
	Target service level	Quantity of water to be produced and conveyed to WTP per day 95 MLD. Allowable quantity 90 MLD Maximum Water losses shall be 6% (Pass or Fail)
	Weightage	50%
	Measured by	Contractor: flow meters installed at Jack well and Entry of WTP and inlet of Service Reservoirs
	Monitored by	Employers Representative
	Applicability	The parameter applies to entry of water in the intake well, Jack well and entry point of service reservoirs For calculation of the achieved service level, measured quantity of water at entry point of service reservoirs .
	Allowable exclusions	The Day on which Power shutdown by EB authorities shall be allowable and shall be taken as pass.
	Parameter 4.2	Quality of Water at the entry point of Service Reservoir
	Target service level	Must meet the CPHEEO standards daily in major five characteristics (Turbidity, Residual Chlorine, Bacteriological test, pH, any one other parameters as CPHEEO norms . if not the meet the requirement more than 3 day in a quarter shall be treated as fail (Pass or Fail)
	Weightage	50 %
	Measured by	Water testing Laboratory set by the contractor and random weekly check in other reputed Labs by the

		client
	Monitored by	• Employers Representative and the client
	Allowable exclusions	No

8. SPECIFICATIONS

229. The Contractor shall carry out the Works based on the Technical Specifications included in this section. The Technical Specifications are included in Volume 2 of the Bidding Document.
230. The Technical Specifications are provided in 2 parts:
- Part 1 – Technical Specifications for Works
 - Part 2 – Technical Specifications for Operations
231. If the specifications for a particular item are not given by the Employer, the Standard Specifications of Bihar Public Works Department (PWD) or Public Health Engineering Department (PHED) shall be followed.
232. All the Materials incorporated in the Works shall be the most suitable for the duty concerned and shall be new and of first class commercial quality, free from imperfections and selected for long life and minimum maintenance. These may be tested according to relevant Indian Standards (IS) or International Standards Organization (ISO) standards in qualified labs and certificates produced to the satisfaction of the Employers Representative.
233. The objectives of the specifications given are to specify the details pertaining to the designs, drawings, and selection of equipment or product. The equipment or product supplied shall be of high standard of quality and best engineering practices and shall comply with all currently applicable standards, regulations and codes.
234. Except as otherwise specified in these technical specifications, the Indian/International Standards and codes of practice in their latest version shall be adhered to for the design, manufacturing, inspection, calibration, installation, field testing, packing, handling and transportation of products. Should any product be offered conforming to other standards, the equipment or products shall be equal to or superior to those specified and the documentary confirmation shall be submitted for the prior approval of the Employer.

9. DRAWINGS

235. **Employer's Drawings.** The List of drawings is provided as a guide line of the specifications and work in Part 4 of the Bidding Document. All data and information furnished in the drawings by the Employer is given in good faith, but the Employer does not guarantee their completeness and accuracy. The drawings shall be verified by the Contractor who should point out errors or discrepancies to the Employers Representative.

LIST OF DRAWINGS FOR IMPROVEMENT OF WATER SUPPLY SYSTEM FORBHAGALPUR MUNICIPAL CORPORATION - PACKAGE BH/WS/02		
S No	DRAWING TITLE	DRAWING No
	VOLUME-I	
1	GENERAL ARRANGEMENT OF INTAKE WORKS	BUDIP/REVISED PROJECT/BHAGALPUR /WS/PHASE II /INT 01
2	LAYOUT OF APPROACH CHANNEL & INTAKE WORKS	BUDIP/REVISED PROJECT/BHAGALPUR /WS/PHASE II /INT 02
3	PROFILE OF THE INTAKE STRUCTURE	BUDIP/REVISED PROJECT/BHAGALPUR /WS/PHASE II /INT 03
4	L- SECTION OF THE RIVER BANK	BUDIP/REVISED PROJECT/BHAGALPUR /WS/PHASE II /INT 04
5	ROUTE ALIGNMENT PLAN ON TOPOGRAPHIC MAP	BUDIP/REVISED PROJECT/BHAGALPUR /WS/PHASE II /INT 05
6	STRUCTURAL DETAILS OF INTAKE WORKS – INTAKE WELL	BUDIP/REVISED PROJECT/BHAGALPUR /WS/PHASE II /INT 06
7	STRUCTURAL DETAILS OF INTAKE WORKS – JACK WELL CUM PUMP HOUSE	BUDIP/REVISED PROJECT/BHAGALPUR /WS/PHASE II /INT 07
8	STAND PIPE AT 1540 CHAINAGE ON RAW WATER MAIN	BUDIP/REVISED PROJECT/BHAGALPUR /WS/PHASE II /INT 08
9	ALIGNMENT OF RAW WATER PUMPING MAIN	BUDIP/REVISED PROJECT/BHAGALPUR /WS/PHASE II /INT 09
10	INLET, OUTLET DETAILS OF SETTLING TANK	BUDIP/REVISED PROJECT/BHAGALPUR /WS/PHASE II /INT 10
11	GENERAL ARRANGEMENT OF WTP WORK	BUDIP/REVISED PROJECT/BHAGALPUR /WS/PHASE II /INT 11
12	WTP & RIVER PROTECTION WORK –SITE LAN	BUDIP/REVISED PROJECT/BHAGALPUR /WS/PHASE II /INT 12
13	WTP HYDRAULIC FLOW DIAGRAM	BUDIP/REVISED PROJECT/BHAGALPUR /WS/PHASE II /INT 13
14	RIVER PROTECTION WORK	BUDIP/REVISED PROJECT/BHAGALPUR /WS/PHASE II /INT 14
15	ALIGNMENT NETWORK OF CLEAR WATER	BUDIP/REVISED PROJECT/BHAGALPUR /WS/PHASE II /INT 15

LIST OF DRAWINGS FOR IMPROVEMENT OF WATER SUPPLY SYSTEM FORBHAGALPUR MUNICIPAL CORPORATION - PACKAGE BH/WS/02		
	TRANSMISSION MAIN	
16	SINGLE LINE DIAGRAM RWPH	BUDIP/REVISED PROJECT/BHAGALPUR /WS/PHASE II /INT 16
17	SINGLE LINE DIAGRAM CWPS & WTP	BUDIP/REVISED PROJECT/BHAGALPUR /WS/PHASE II /INT 17
18	TYPICAL DETAILS OF BEDDING & BACKFILLING FOR WATER TRANSPORT PIPE	BUDIP/REVISED PROJECT/BHAGALPUR /WS/PHASE II /INT 18
19	DETAILS OF THRUST BLOCK	BUDIP/REVISED PROJECT/BHAGALPUR /WS/PHASE II /INT 19

236. **Contractor's Drawings.** All completion drawings provided by the Contractor shall be on standard size sheets, prepared on computer with Auto CAD or equivalent and shall show particulars in a title block located in the lower right hand corner, in addition to the name of the Contractor and equipment manufacturer, date, scale, drawing, revision number (RO for drawings submitted initially, R1, R2 etc., for drawings submitted subsequently). A blank space shall be provided for the Employers Representative's approval stamp and provision shall be made for details of revisions to be recorded. All drawings submitted by the supplier shall use the English language. All drawings shall be clearly and fully cross-referenced to the other drawings as relevant. The Contractor's attention is drawn to the Technical Specifications for more information on the drawing requirements.

10. PERSONNEL REQUIREMENTS

237. The table below presents the Contractor's key personnel required, minimum numbers of staff required for each key position, educational and working experience requirements.

238. Using Form PER-1 and PER-2 in Section 4 [*Bidding Forms*], the Bidder must demonstrate it has key personnel that meet the specified requirements.

SNo	Position	Minimum Number Required	Professional requirements		
			Education level	Total Working Experience	Working Experience in similar assignments
General Management and Construction Staff					
1	Project Manager (Contractor's Representative)	1	Graduate Engineer with specific experience in implementation of water supply improvements in urban areas.	10 years	5 years
2	Planning and Material Engineer	1	Graduate Engineer	7 years	3 years
3	Quality Assurance Engineer	1	Graduate Engineer	7 years	3 years
4,5,6	Construction Supervisors	3	Graduate Engineers in civil/ electrical/ mechanical/ instrumentation engineering	5 years	2 years
7	Intake Expert	1	Graduate Engineer in civil/Environmental engineering	7 years	5 years
8	Water Treatment Plant Expert	1	Graduate in Civil/ Environmental engineering	7 years	3 years
9	Safeguard Officer	1	Graduate in social science/Environment	5years	2 years
10	Safeguard officer (Nodal officer) for Environment Health & Safety)	1	Graduate in Social science/Environment	5 years	2 years
Operational Staff					
1	Operational Manager	1	Graduate Engineer with experience in water distribution management system with 5 years on continuous water supply	7 years	3 years
2	Plant Engineer	1	Graduate with post graduate diploma in Construction	7 years	3 years
3	Supervisor	2	Graduate in Civil Engineering	10 years	5 years
4	Chemist	1	Bachelor in Chemistry	7 years	3 years
5	Computer operator	1	Graduate in arts and Diploma in computer application	3 years	1 years
6	Lab attendant	2	10 th pass	2 years	1 years
7	Electrician	2	ITI holder	2 years	1 years
8	Helper	24	10 th pass	2 years	1 years
9	Fitter	1	ITI holder	2 years	1 years
10	Instrumentation Engineer	1	Graduate in Instrumentation Engineering	2 years	1 years
11	Pump Operator	4	ITI holder	2 years	1 years
12	Mechanic	1	ITI holder	2 years	1 years
13	Welder	1	ITI holder	2 years	1 years

SNo	Position	Minimum Number Required	Professional requirements		
			Education level	Total Working Experience	Working Experience in similar assignments
14	Gardener	1	8 th pass	2 years	1 years
15	Guard	8	10 th pass	2 years	1 years
16	Attendant	2	8 th pass	2 years	1 years
17	Store keeper cum Accountant	1	Graduate in accountancy	2 years	1 years
18	Truck Drivers	2	Heavy license holder	2 years	1 years
19	Valve man	7	ITI holder	2 years	1 years

11. EQUIPMENT REQUIREMENTS

239. Equipment requirements are presented in the Table presented below

Equipment for Part 1 – Works

S No	Equipment Type and Characteristics	Minimum Number Required
1	Excavator	2
2	Concrete batch mix plant	1
3	Transit mixers	2
4	Laboratory for testing fineness, consistency, setting time compressive & tensile strength of cement compressive & flexural strength of cement concrete and proof stress, elongation, tensile strength, bending & re-bending of reinforcement steel	1
5	Concrete mixer with hopper	2
6	Road roller (tandem/vibratory)	1
7	Needle/ plate vibrator	5
8	Tipper lorries	3
9	Total station survey equipment set	1
10	Bituminous hot mix plant	1
11	Road layer/ paver equipment	1
12	Hydraulic testing equipment for pipes- set	1
13	Water tanker (with sprinkling arrangements)	1
14	Crane or lifting winch of 2T capacity for lowering and un-lowering of pumpset	1
15	Air compressor of minimum 250psi and 600 cuft/min capacity	1
16	Dewatering pumps	5

Equipment for Part 2 - Operations

S No	Equipment Type and Characteristics	Minimum. Number Required
1	Dredging unit	1
2	Boat caring capacity of 10 persons	2
3	Pipe locators	2
4	Air compressor and jack hammer	1
5	Pipe welding sets	3
6	Mobile generator	1
7	Dewatering pumps	2
8	Portable flow meter	2

Section 7 - General Conditions of Contract

1. **Name of Employer:** State of Bihar, acting through its Urban Development and Housing Department, in turn acting through the Bihar Urban Infrastructure Development Corporation Ltd. (BUIDCo)
2. **Name of Contract:** Improvement of Water Supply System in Bhagalpur Municipal Corporation (BWSP-02)
3. The Conditions of Contract comprise two parts, this Section 7 - General Conditions of Contract (GCC) and the following Section 8 - Particular Conditions of Contract.
4. The GCC shall be the Conditions of Contract for Design, Build and Operate Projects (First Edition 2008), prepared by the FédérationInternationale des Ingénieurs-Conseils or FIDIC (FIDIC Gold Book) available at <http://fidic.org/bookshop>. The GCC is deemed to include the General Conditions of Dispute Adjudication Agreement and the Procedural Rules for Dispute Adjudication Board Members of the FIDIC Gold Book.
5. Interested bidders may view a copy of the FIDIC Gold Book through inspection of the Bid Document, pursuant to paragraph 5 of the Invitation for Bids. Please contact:
Additional Program Director
Bihar Urban Development Investment Program (BUDIP)
Bihar Urban Infrastructure Development Corporation Limited (BUIDCo)
#SFC Building, 2nd Floor, Daroga Prasad Rai Path, R Block, Road No 2,
Patna - 800001 Bihar, India.
Tel: 0612-612-2506109; email: apdinpmu.buidco@gmail.com
(during normal working day/hours only)
6. A Bidder must, as part of its Bid proposal, submit an 'Undertaking' stating the following:
 - i. It has read and reviewed the General Conditions of Contract (GCC) referred to in Section 7 of the Bid Document, namely the Conditions of Contract for Design, Build and Operate Projects (First Edition 2008), prepared by the FédérationInternationale des Ingénieurs-Conseils or FIDIC; and
 - ii. In respect of the conditions of contract, its Bid is submitted on the basis of the aforementioned GCC, as supplemented by Section 8 of the Bidding Document.

Section 8 - Particular Conditions of Contract

The following Particular Conditions of Contract (PCC) shall supplement the General Conditions of Contract (GCC). Whenever there is a conflict, the provisions herein shall prevail over those in the GCC.

Part A– Contract Data

Sub-Clause	Data to be given	Data
1.1.24	Cost Plus Profit	None
1.1.26	Cut Off Date	As per Sub-Clause 15.2(h)
1.1.32	Employer's Name and Address	<p>During Design Build:</p> <p>State of Bihar, acting through its Urban Development and Housing Department, in turn acting through the Bihar Urban Infrastructure Development Corporation Ltd:</p> <p>Managing Director, BUIDCo</p> <p>Address:</p> <p>SFC Building, 2nd Floor, Daroga Prasad Rai Path, R Block, Road No 2, Patna ZIP Code: 800001, Bihar</p> <p>Country: India</p> <p>Tel: 0612-612-2506109</p> <p>Fax: +91612- 2210103</p> <p>Email: apdinpmu.buidco@gmail.com;</p> <p>During Operation Service:</p> <p>Bhagalpur Municipal Corporation,</p> <p>Bhagalpur, Bihar, INDIA</p> <p>Tel: 0641 – 2302035</p> <p>Email: nagarnigambhagalpur@gmail.com</p>
1.1.35	Employer's Representative	Deputy Team Leader/ Construction Manager, from the Design and Supervision Consultants, Bihar Urban Development Investment Program (BUDIP), appointed by the Employer under a separate contract or as nominated by the Employer from time to time
1.1.70	Section	Section means the part of Works scheduled to be completed in accordance to Milestones provided under Sub-Clause 2.1.1 of Section 6 – Employer's Requirements.
1.1.78	Time for Completion of Design	900 days from the Commencement Date

	Build	
1.3	Address of Employer's Representative for communication	Deputy Team Leader/ Construction Manager, Design and Supervision Consultants (DSC), Bihar Urban Development Investment Program (BUDIP) #303, Maurya Tower, Mauryalok Complex, Budh Marg, Patna ZIP Code: 800001, Bihar Country: India Tel: 0612-2200011 Email: dscbiharadb@stc.co.in
1.3	Address of Contractor for Communication
1.3 (c)	Agreed Systems of Electronic Transmission	Written or by facsimile or electronic mail only.
1.4	Contract shall be governed by the law of	India and State of Bihar. In case of conflict, the Laws of India should prevail.
1.4	Ruling Language	English
1.4	Language for Communication	English
2.1	After receiving the Letter of Acceptance, the Contractor shall be given right of access to part of the Site within:	14 days for all sites.
4.2	Performance Security (as percentages of Accepted Contract Amount in currencies)	The performance security shall be in the form of an unconditional bank guarantee in the amount(s) of Ten (10) percent of the Accepted Contract Amount, denominated in the types and proportions of the currencies in which the Contract Price is payable, or in a freely convertible currency acceptable to the Employer. If the Bank issuing the Performance Security is located outside India, it shall have a correspondent Bank located in India including banks in Patna/Bhagalpur, Bihar to make it enforceable.
4.2	Reduction in Performance Security at the end of Retention Period	50%
5.1	Period for notification of errors, faults and other defects	180 days from the Commencement Date

5.2	Contractor's documents requiring approval	As detailed in Scope of Services and other clauses of Section 6: Employer's Requirements
6.5	Normal working hours on the Site	08:00 Hrsto 18:00 Hrs
8.2	Period of the Operation Service	3,652 days from the Initial Take Over Date,as defined in Clauses of Section 6 – Employer's Requirements
9.2	Time for Completion of Design-Build	900 days from the Commencement Date
9.2	Time for Completion of each Section	Section is the part of those Permanent Works and scheduled to be completed in each of the time period in accordance with the Milestones under Sub-Clause 2.1.1 of Section 6: Employer's Requirements
9.6	Delay damages	0.05 % of the Accepted Contract Amount pertaining to each Section
9.6	Maximum amount of delay damages	10% of Accepted Contract Amount
10.6a	Maximum compensation payable by the Contractor	10% of the Accepted Contract Amount for Operation Service
10.6b	Maximum compensation payable by the Employer	2% of the Accepted Contract Amount for Operation Service
10.7	Performance damages	Shall be in accordance to Schedule 5– Contractor's Payments
10.7	Minimum production output required	Shall be in accordance to the Performance Standards provided at Subsection 3: Performance Standards and Measuring Framework under Section 6: Employer Requirements
10.7 (b)	Period of Failure	As per Sub-Clause 10.7 (b) only
13.5	Percentage rate to be applied to Provisional Sums	10% which includes statutory deductions on contractor's payment.
14.2	Amount of Advance Payment (percent of Accepted Contract Amount)	<p>10% of the Accepted Contract Amount for Design Build Works payable in two installments in the currencies and proportions in which the Accepted Contract Amount is payable.</p> <p>The first installment of 5% will be released immediately after signing the Contract.</p> <p>The second installment of 5% will be released on demand by the contractor upon the approval of the Construction Plan and submission of utilization certificate for first installment certified by Employer's representative.</p>

		<p>The advance payment taken by contractor is to be deposited in a separate dedicated Project Bank Account to be opened and maintained at Bhagalpur.</p> <p>The bank guarantee shall be issued by a reputable bank located in the Employer's country, which may include scheduled banks or nationalized banks, or by a foreign reputable bank outside the Employer's country, through a correspondent bank located in the Employer's country, which may include banks in Patna/Bhagalpur, to make it enforceable</p>
14.2	Percentage deductions for repayment of Advance Payment	<p>Replace last two paragraphs with following:</p> <ul style="list-style-type: none"> The advance payment shall be recovered from each interim payment @ 12.5% of each invoice so that 100% of the amount due is recovered by the time 80% of the payment for the works is made to the contractor.
14.3	Percentage of Retention	5%
14.3	Limit of Retention Money	5% of Accepted Contract Amount
14.6 (b) (i)	Plant and Materials	"Not applicable; No payment against shipping will be made to the contractor."
14.6(c) (i)	Plant and Materials for payment when delivered to the Site	In accordance to the payment terms provided at Schedule 5– Contractor's Payments.
14.7(b)	Minimum Amount of Interim Payment Certificate	Minimum amount for Payment is not Applicable however invoice will be putup on monthly basis.
14.9	Financing charges for delayed payment(percent points above discount rate):	9%
14.17	Currencies for payment of Contract Price	Indian Rupee(INR) and up to three foreign currencies of contractor's choice
14.17	Proportion of Currencies	In the proportions of currencies of Contract
14.17	Currencies for Payment of Damages	Local and Foreign Currency in the proportions of contract
14.19	Amount of Maintenance Retention Fund	5% of the Accepted Contract Amount for Operation Services
17.1	Operation of forces of nature allocated to the Contractor	None
17.8	Total liability of the Contractor shall not exceed	Equal to the Accepted Contract Amount

19.2 (a) (i)	Permitted Deductible Limits	None
19.2 (a) (ii)	Additional sum to be insured	INR 20 million
19.2 (a) 4	Employer's Risks to be insured	Nil
19.2 (a) 5	Exceptional Risk to be insured	INR 10 million
19.2 (b)	Insurance of Contractor's Equipment (amount required):	INR 20 million
19.2 (c)	Amount of professional liability insurance	INR100 million
19.2 (d)	Period for which professional liability insurance required	Up to 365 days after the Scheduled Completion Date or until issue of final payment certificate for Design Build whichever is later.
19.2 (f)	Amount of insurance required for injury to persons and damage to property	Shall be at least 2% of Accepted Contract Amount subject to a minimum of INR 5 (five) million for each occurrence with unlimited occurrences
19.3 (a)	Amount of fire extended cover insurance required	INR 10million
19.3 (d)	Other insurances required by law and local practice from the Contractor (give details):	All assets created under the contract.
19.3 (e)	Other optional insurances required from the Contractor	None
20.3	Date for appointment of DAB	28 days from the Commencement Date
20.4	The DAB shall comprise	Three (3) members
20.8	Appointing entity (official) for DAB members, if not agreed, shall be:	President, Institution of Engineers (India), Bihar State Chapter
20.8	Place of Arbitration	As per sub-clause 20.8 (a) below
20.8	Language of Arbitration	English
20.8(a)	Arbitration to be administered by:	For a Local Contractor: In the case of a dispute between the Employer and the Contractor, the dispute shall be settled by arbitration in accordance with the rules of procedure for Indian arbitration act as in force on the date of the Contract. Place of arbitration: Patna, State of Bihar, India.

		<p><i>For a Foreign Contractor:</i></p> <p>In the case of a dispute between the Employer and the Contractor, the dispute shall be settled by international arbitration conducted in accordance with the Arbitration Rules of the Singapore International Arbitration Centre. The arbitration procedure shall be administered by the Singapore International Arbitration Center.</p> <p>Place of arbitration: Singapore.</p>
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Part B – Specific Provisions

Sub-Clause	Section	Specific Provision
1.1	Definitions	<p>Unless otherwise specifically stated, or unless the context requires otherwise, capitalized terms in this Part B and in the Schedules to the GCC are as defined under Sub-Clause 1.1 of the General Conditions of Contract and under Sub-Clause 1.2 of Section 6.1 Scope of Services under Section 6 - Employer's Requirements.</p> <p>The Particular Conditions of Contract (PCC) Part B - Specific Provisions, is to amend or for additions to the General Conditions of Contract (GCC - Section 7). Whenever there is a conflict, the provisions herein shall prevail over those in the GCC.</p> <p>'Bid' and 'Tender' will have the same meaning, as defined in Section 1- Instructions to Bidder.</p>
1.1.8	Commissioning Certificate	<p><i>Amend the Definition as:</i></p> <p><i>"Commissioning Certificate" means the certificate issued by the Employer's Representative to the Contractor under Sub-Clause 11.7 [Commissioning Certificate] marking the end of the Construction Period under Sub-Clause 2.1.1 under Section 6: Employer's Requirements.</i></p>
1.1.30	Design-Build Period	<p><i>Amend the Definition as:</i></p> <p>"Design-Build Period" means the period from the Commencement Date and up to the Scheduled Construction Completion Date as defined in Sub-Clause 2.1.1 of Section 6: Employer's Requirements.</p>
1.1.35	Employer's Representative	<p>The term "Engineer", as used in the Contract, is synonymous to "Employer's Representative."</p>
1.1.48	Letter of Acceptance	<p><i>Add to the Definition:</i></p> <p>"Letter of Acceptance" and "Notification of Award" will have the same meaning unless otherwise specifically stated."</p>
1.1.58	Operation Service Period	<p><i>Amend the Definition as:</i></p> <p>"Operation Service Period" is the period of the Contract commencing from the Initial Takeover Date, which is on completion of 900 days from the Commencement Date, and for a period of 3,652 days up to the Contract Completion Date or extended by the Employer on mutual agreement</p> <p>In case of Works installed or constructed and</p>

		commissioned by the Contractor, the Operation Service shall not commence until the Design-Build of the Works or any Section has been completed in accordance with Sub-Clause 9.12 [Completion of Design-Build] and the Commissioning Certificate issued under Sub-Clause 11.7 [Commissioning Certificate].
1.1.66	Retention Period	<i>Amend the Definition as:</i> “Retention Period” means the period of 365 days after issue of Final Design-Build Completion Certificate by the Employer.
1.1.78	Time for Completion of Design-Build	<i>Amend the Definition as:</i> “Time for Completion of Design-Build” means the time for completing the Design-Build or a Section thereof (as the case may be) under Sub-Clause 9.2 [<i>Time for Completion of Design-Build</i>] as stated in the Contract Data (with any extension under Sub-Clause 9.3 [<i>Extension of Time for Completion of Design-Build</i>]).
1.1.83	Year and Month	<i>Amend the Definition as:</i> “Year means three hundred and sixty five [365] days and “month” means thirty [30] days
1.2	Interpretation	<i>Add the following;</i> “(g) References to Operation Service after the completion of Design-Build Period (such as in GCC Sub-Clauses 1.1.8 and 9.12[d]) shall mean the Operation Service covering Works installed or constructed and commissioned by the Contractor, following the PCC, Part B, ref. GCC 10.2, and the operation of remaining existing facilities.
1.5	Priority of Documents	“Delete sub paragraphs (a) to (i) in Sub-Clause 1.5 and replace with the following: (a) the Contract Agreement, (b) the Letter of Acceptance, (c) the Letter of Tender, (d) the Particular Conditions Part A– Contract Data, (e) the Particular Conditions Part B– Special Provisions, (f) the General Conditions of Contract (FIDIC Gold Book), (g) the Employer’s Requirements,, (h) the Schedules (Technical and Price, including priced Bill of Quantities), (i) the Contractor’s Proposal

		(j) the Resettlement Plan (RP), Environmental Management Plan (EMP), IEE and any other documents forming part of the Contract.
1.6	Contract Agreement	<i>Replace the phrase</i> “The Contract Agreement shall be based upon the form annexed to the Particular Conditions” by the following; “The Contract Agreement shall be based upon the form as given in Section 9, Contract Forms”.
1.14	Compliance with Laws	<i>Add sub-clause (d), (e) and (f) as follows:</i> (d) Preparing applications in accordance to standard procedures for obtaining all statutory clearances and approvals required from Government of Bihar and/or Government of India, including all environmental clearances, permission from Highway and Railway authorities, Inland Waterway Authority, Forest Department and any other such authorities as may be required. On behalf of BUIDCo, the Contractor will prepare such applications and BUIDCo will apply for necessary clearances from respective departments and the BUIDCo together with the Contractor shall take follow-up actions to such clearances and approvals. (e) BUIDCo shall by or before the Commencement Date, grant, or arrange for the benefit of the Contractor, the rights and authority to repair or replace the facilities, to lay pipes, construct civil structures, install equipment and machinery on its behalf and to carry out necessary excavations to fulfill its obligations under this Contract. (f) BUIDCo shall procure, obtain and maintain all consents to enable the Contractor to perform its duties and its obligations under the Contract for the duration of the Contract. BUIDCo shall deal directly with the departments of the government or statutory authorities on all matters that require consultation and discussion with such department and shall ensure that the Contractor is able reasonably to perform its duties under the Contract. The Contractor will provide all reasonable assistance in procuring consents.
1.16	Inspections and Audit by the Asian Development Bank	<i>Add Sub Clause 1.16 as under:</i> The Contractor shall permit the Asian Development Bank and/or persons appointed by the Bank to inspect the Site and/or the Contractor’s accounts and records relating to the performance of the Contract and to have such accounts and records audited by auditors appointed by the Bank if required by the Bank.
2.1	Right of Access to the Site	<i>Add at the end of Sub-Clause as follows:</i> BUIDCo/BMC shall provide to the Contractor and Contractor’s Personnel, at no cost to the Contractor,

		<p>free, continuous and exclusive access to, possession and right to use of, and rights over, the land, installations, and Works and Site, sufficient to enable the Contractor to carry out its obligations under this Contract on or before the Commencement Date until the Contract Completion Date.</p> <p>Employer will get all the utilities shifted through line department to whom these utilities belong using provisional sum. Employer will get the costs estimate from line department and Contractor will be asked to make direct payments to the relevant line agencies and BUIDCo will reimburse such amounts to the Contractor in next claim invoice. Contractor will assist in identifying such utilities.</p>
3.1	Employer's Representative's Duties and Authority	<p>Insert the following after the second paragraph:</p> <p>Employer's Representative will have no authority to approve the (i) Time extensions; and (ii) Contract Variations.</p>
3.6	Management Meetings	<p><i>Insert this Sub-Clause after Sub-Clause 3.5:</i></p> <p>The Employer's Representative or the Contractor's Representative may require the other to attend a management meeting in order to review the progress with reference to the agreed program and arrangements for future work. The Employer's Representative shall record the business of management meetings and supply copies of the record to those attending the meeting and to the Employer. In the record, responsibilities for any actions to be taken shall be in accordance with the Contract.</p>
4.2	Performance Security	<p><i>Amend the last paragraph as:</i></p> <p>The Employer shall return 50% of the Performance Security on expiry of 365 days after the completion of the Construction Period. The remaining 50% shall be refunded in three equal tranches with the first tranche released on completion of 2,340 days, the second tranche released on completion of 3,420 days, and the final tranche released on issue of the Contract Completion Certificate.</p>
4.12	Unforeseeable Physical Conditions	<p><i>Add the following at end of the Sub-Clause:</i></p> <p>In addition to notice of any unforeseeable physical conditions, the Contractor shall provide the Employer's Representative with a written notice of any unanticipated environmental or resettlement risks or impacts that arise during construction, implementation or operation of the Plant or Permanent Works, which were not considered in the updated and approved Initial Environmental Examination (IEE), the Environmental Management Plan (EMP), or the</p>

		updated and approved Resettlement Plan (RP) attached in Section 6: Employer's Requirements as Annex A and Annex B.
4.16	Transport of Goods	<p><i>Add the following at end of the Sub-Clause:</i></p> <p>The Contractor shall adequately record the condition of roads, agricultural land and other infrastructure prior to the start of transporting Materials, Goods and equipment, and construction.</p>
4.18	Protection of Environment	<p><i>Insert the following at the end of Sub-Clause:</i></p> <p>The Contractor shall comply with all applicable national, provincial and local environmental Laws and regulations.</p> <p>The Contractor shall:</p> <p>(a) establish all operational systems for managing environmental impacts;</p> <p>(b) carry out all of the monitoring and mitigation measures set forth in the updated and approved IEE and EMP attached in Section 6 Annex A; and</p> <p>(c) allocate the budget required to ensure that such measures are carried out.</p> <p>The Contractor shall submit monthly reports on the implementation and monitoring of such measures to the Employer.</p> <p>More particularly, the Contractor shall comply with (i) the measures and requirements set forth in the updated and approved EMP attached in Section 6 Annex A; and (ii) any corrective or preventative actions set out in safeguards monitoring reports that the Employer will prepare from time to time to monitor implementation of the IEE and the EMP.</p> <p>The Contractor shall allocate a budget for compliance with these measures, requirements and actions.</p>
4.19	Electricity, Water and Gas	<p>During operation service period, BUIDCo/BMC shall provide the Contractor with continuous access to electricity supply facilities.</p> <p>BUIDCo/BMC shall pay to the electricity supply company all the charges for demand, consumption, etc., as levied other than the penalties if levied due to operating negligence of the Contractor or power factor surcharges</p>
4.21	Progress Reports	<p><i>Insert following after Sub-Clause (h):</i></p> <p>(i) Monitoring of the obligations in Sub-Clauses 4.18, 6.4, 6.7, 6.12, and 6.13.</p>

4.26	Contract management	<p><i>Add sub-clause 4.26 as follows:</i></p> <p><i>Contractor will use the suitable computer software to manage the contract.</i></p>
5.6	Operation and Maintenance Manuals	<p><i>Amend the Sub-Clause as:</i></p> <p>28 days prior to the commencement of the Commissioning Period for any Section of Works, the Contractor shall supply to the Employer's Representative two copies of all operation and maintenance manuals and commissioning plans in sufficient detail for the Employer to operate, maintain, dismantle, reassemble, adjust and repair the Plant and the Works. The Contractor shall supply the balance of the required operation and maintenance manuals prior to the issue of the Commissioning Certificate. The Works or any Section shall not be considered to be completed for the purposes of issuing the Commissioning Certificate under Sub-Clause 11.7 [Commissioning Certificate] until the Employer's Representative has received these documents.</p>
6.4	Labour Laws	<p><i>Insert the following at the end of the Sub-Clause:</i></p> <p>The Contractor shall not make employment decisions based upon personal characteristics unrelated to job requirements. The Contractor shall base the employment relationship upon equal opportunity and fair treatment, and shall not discriminate with respect to aspects of the employment relationship, including recruitment and hiring, compensation (including wages and benefits), working conditions and terms of employment or retirement, and discipline.</p> <p>The Contractor shall provide equal wage and benefits to men and women for work of equal value or type. The Contractor shall not employ forced labour, which consists of any work or services, not voluntarily performed, that is exacted from an individual under threat of force or penalty, and includes any kind of involuntary or compulsory labour, such as indentured labour, bonded labour, or similar labour-contracting arrangements.</p>
6.7	Health and Safety	<p><i>Insert the following at the end of the Sub-Clause:</i></p> <p>The Contractor shall conduct health and safety programs for workers employed under the project, and shall include information on the risk of sexually transmitted diseases, including HIV/AIDS in such a program.</p>
6.12	Child Labour	<p><i>Add Sub-Clause 6.12 as under:</i></p> <p>The Contractor shall not employ any child to perform any work, including work that is economically exploitative, or is likely to be hazardous to, or to</p>

		interfere with, the child's education, or to be harmful to the child's health or physical, mental, spiritual, moral, or social development. "Child" means a child below the statutory minimum age specified under applicable national Laws.
6.13	Resettlement	<p><i>Add Sub-Clause 6.13 as under:</i></p> <p>The Contractor shall comply with (i) the measures and requirements set forth in the updated and approved Resettlement Plan (RP) attached in Section 6 Annex B, to the extent it concerns impacts on affected people during construction; and (ii) any corrective or preventive actions set out in safeguards monitoring reports that the Employer will prepare from time to time to monitor implementation of the Resettlement Plan.</p> <p>The Contractor shall allocate a budget for compliance with these measures, requirements and actions.</p>
7.3	Inspections	<p><i>Add following paragraph at the end of sub clause:</i></p> <p>BMC shall be entitled to monitor on a regular basis the Contractor's performance of the services and may request any technical documents and reports necessary to do so provided that such requests would not hinder the Contractor in performing its obligations under the Contract. The Employer shall have access to the Project Facilities to inspect the facilities during business hours upon reasonable advance notice to the Contractor. BMC/BUIDCoshall be entitled to delegate such inspection rights to a third party provided that the same conditions shall apply.</p>
8.1	Commencement Date	The Commencement Date shall be within 30 days after the Contractor receives the Letter of Acceptance
8.2	Time for completion of Design Build	<p><i>Add following paragraph at the end of sub clause:</i></p> <p>If the contractor is not able to complete the work within the stipulated time for completion or the extended time for completion, contractor will submit an application for extension of time for Contract Completion at least 28 days before the expiry of stipulated or extended Contract period. The Employer will extend the Contract provisionally to keep the Contract alive without prejudice to the right of Employer to take appropriate decision as per the Contract provisions.</p>
9.14	Bonus for early completion of Construction Period	<p><i>Add a new Sub-Clause 9.14 as under:</i></p> <p>The Contractor shall be eligible for an incentive bonus for early completion of the whole of the Design-Build works under the Development Period at 0.05% (zero point zero five percent) of the Accepted Contract Amount for Design-Build works for each day that the</p>

		completion is earlier than the intended completion date of the Development Period. The Employer's Representative shall certify that the Design-Build works are complete. The maximum amount of bonus for the whole of the Design-Build works shall be limited to 10% (ten percent) of the Accepted Contract Amount for Design-Build works. The bonus shall be a one-time payment applicable to the whole of the Design-Build works but not on Sections.
10.2	Commencement of Operation Service	<p><i>Amend the first two paragraphs as under:</i></p> <p>Unless otherwise stated in the Employer's Requirements, the commencement of the Operation Service shall be from the Initial Take Over Date.</p> <p>In case of Works installed or constructed and commissioned by the Contractor, the Operation Service shall not commence until the Design-Build of the Works or any Sections has been completed in accordance with Sub-Clause 9.12 [Completion of Design-Build] and the Commissioning Certificate issued under Sub-Clause 11.7 [Commissioning Certificate].</p>
10.3	Independent Compliance Audit	<p><i>Replace with:</i></p> <p>An independent body to be appointed by the Employer, under a separate contract, will act as an Auditing Body (AB) for the purpose of monitoring and evaluation of the performance of the Operations, in accordance with its terms of reference in Schedule 3, Section 8- Particular Conditions of Contract.</p>
12.1(a) iii	Completion of outstanding work and Remedying the Defects	<p><i>Add a new Sub-Clause as under:</i></p> <p>(iii) on the completion of construction, the Contractor shall fully reinstate pathways, other local infrastructure, and agricultural land to at least their pre-project condition as recorded by the Contractor in consonance with its obligation in Sub-Clause 4.16.</p>
14.1(a)	Contract Price	<p><i>Add a Sub-Clause (a) as under:</i></p> <p>The Employer will assist the Contractor to obtain any lawful exemptions from payment of Goods and Services Tax (GST) notified under Central Goods and Services Tax (CGST) Rules, 2017, if available through any Government Notification.</p> <p>The responsibility for obtaining any such exemptions from the Competent Authority will remain with the Contractor and the Employer shall not in any way be responsible for admissibility of the claims or eligibility of the Contractor.</p> <p>The exemption if any availed by the contractor shall be passed on to the employer</p>

14.10	Payment of Retention Money	<p><i>Add the following at the end of the Clause</i></p> <p>The proportion of payments retained from each payment under the Design-Build Period shall be 5% (five percent) of the eligible payments. No interest will be paid on the Retention Money. Upon completion of the Defect Liability Period, half the Retention Money shall be repaid to the Contractor and the remaining half shall be repaid in three equal tranches to be released along with the proportion of the Performance Security in accordance with Sub-Clause 4.2 [<i>Performance Security</i>].</p>
14.18	Asset Replacement Fund	<i>Deleted.</i>
15.8	Corrupt or Fraudulent Practices	<p><i>Add Sub-Clause 15.8 as provided hereunder:</i></p> <p><i>[For contracts financed by the Asian Development Bank]</i></p> <p>For the purposes of this Subclause:</p> <p>ADB's Anticorruption Policy requires Borrowers (including beneficiaries of ADB-financed activity), as well as Contractors, Subcontractors, manufacturers, and Consultants under ADB-financed contracts, observe the highest standard of ethics during the procurement and execution of such contracts. In pursuance of this policy, ADB</p> <p>(a) defines, for the purposes of this provision, the terms set forth below as follows:</p> <ul style="list-style-type: none"> (i) "corrupt practice" means the offering, giving, receiving, or soliciting, directly or indirectly, anything of value to influence improperly the actions of another party; (ii) "fraudulent practice" means any act or omission, including a misrepresentation, that knowingly or recklessly misleads, or attempts to mislead, a party to obtain a financial or other benefit or to avoid an obligation; (iii) "coercive practice" means impairing or harming, or threatening to impair or harm, directly or indirectly, any party or the property of the party to influence improperly the actions of a party; (iv) "collusive practice" means an arrangement between two or more parties designed to achieve an improper purpose, including influencing improperly the actions of another party; (v) "obstructive practice" means (a) deliberately destroying, falsifying, altering, or concealing of evidence material to an ADB investigation; (b) making false statements to investigators in

		<p>order to materially impede an ADB investigation; (c) failing to comply with requests to provide information, documents, or records in connection with an Office of Anticorruption and Integrity (OAI) investigation; (d) threatening, harassing, or intimidating any party to prevent it from disclosing its knowledge of matters relevant to the investigation or from pursuing the investigation, or</p> <p>(e) materially impeding ADB’s contractual rights of audit or access to information; and</p> <p>(vi) “integrity violation” is any act which violates ADB’s Anticorruption Policy, including (i) to (v) above and the following: abuse, conflict of interest, violations of ADB sanctions, retaliation against whistleblowers or witnesses, and other violations of ADB’s Anticorruption Policy, including failure to adhere to the highest ethical standard.</p> <p>(b) will reject a proposal for award if it determines that the Bidder recommended for award has, directly or through an agent, engaged in corrupt, fraudulent, collusive, coercive, or obstructive practices or other integrity violations in competing for the Contract;</p> <p>(c) will cancel the portion of the financing allocated to a contract if it determines at any time that representatives of the borrower or of a beneficiary of ADB-financing engaged in corrupt, fraudulent, collusive, coercive, or obstructive practices or other integrity violations during the procurement or the execution of that contract, without the borrower having taken timely and appropriate action satisfactory to ADB to remedy the situation; and</p> <p>(d) will impose remedial actions on a firm or an individual, at any time, in accordance with ADB’s Anticorruption Policy and Integrity Principles and Guidelines (both as amended from time to time), including declaring ineligible, either indefinitely or for a stated period of time, to participate¹ in ADB-financed, -administered, or -supported activities or to benefit from an ADB-financed, -administered, or -supported contract, financially or otherwise, if it at any time determines that the firm or individual has, directly or through an agent, engaged in corrupt, fraudulent, collusive, coercive, or obstructive practices or other integrity violations.</p>
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¹ Whether as a Contractor, Nominated Subcontractor, Consultant, Manufacturer or Supplier, or Service Provider; or in any other capacity (different names are used depending on the particular Bidding Document). A Nominated Subcontractor is one which either has been (i) included by the Bidder in its prequalification application or bid because it brings specific and critical experience and know-how that are accounted for in the evaluation of the bidder’s prequalification application or the bid, or (ii) appointed by the Employer.

Part C – Schedules**Schedules to General Conditions of Contract**

- Schedule 1: Obligations of the Employer through BUIDCo - supplement to GCC Clause 2
- Schedule 2: Obligations of the Employer through BMC - supplement to GCC Clause 2
- Schedule 3: Obligations of the Contractor - supplement to GCC Clause 4
- Schedule 4: BMC Personnel - supplement to GCC Sub-Clause 2.3 (Deleted)
- Schedule 5: Contractor's Payments - supplement to GCC Clause 14
- Schedule 6: Terms of Reference (ToR) of Auditing Body – supplement to GCC Sub-Clause 10.3

Schedule 1: Obligations of the Employer through BUIDCo

During the term of this Contract, the Employer shall have the following obligations:

1. On receipt of a reasonable request from the Contractor, and in consultation with BUIDCo and Bhagalpur Municipal Corporation (BMC), the obligation to direct BUIDCO/BMC to provide access to all the sites by the commencement date. .
2. On receipt of a request from the Contractor, deemed reasonable to BUIDCo, to: (i) release sufficient funds to undertaking major maintenance like replacement of existing or new infrastructure but not including those assets procured and installed by the Contractor as part of the approved Construction Plan; and (ii) expressly permit the Contractor to implement such works (a) on appropriate Variation orders, or (b) by organizing implementation of such works by third party contractors under separate contracts in such a manner that it will not affect the smooth conduct of the Contractor Obligations under this Contract.
3. Manage the project roles and responsibilities, interfaces and resolution of problems arising out of them using appropriate level(s) of interface.

Schedule 2: Obligations of the Employer through Bhagalpur Municipal Corporation (BMC)

1. BMC shall provide to the contractor, at no cost to the contractor, free, continuous and exclusive access to, possession and right to use of, and rights over, the land, installation, and project Facilities, sufficient to carry out its obligation under the contract on or before the commencement Date until the contract completion Date.
2. To the extent that BMC require access to the project Facilities, for example to carry out statutory duties, it shall request such access from the contractor. BMC, its sub-contractors, employees and consultant, in exercising their rights of access to the project Facilities within the service area, shall comply at all times with:
 - a. All governing Laws, relevant permits set forth in GCC Sub –clause 1.13 and other permits for the services and all relevant health and safety requirement;
 - b. Instruction and direction issued by contractor which are necessary to ensure compliance by the contractor with any governing Laws and any relevant health and safety requirement applicable to their respective activities in service areas; and
 - c. Such health and safety regulations and site regulations as the contractor has in effect at the facilities from time to time
3. The contractor shall be relieved from performance of its obligations under this contract to the extent that BMC or its sub-contractor impede or prevent the performance by contractor of its obligation under this contract but shall use reasonable endeavors to perform the services and mitigate any loss or damage.
4. BMC shall procure, obtain and maintain all consents to enable the Contractor to perform its duties and its obligations under the Contract for the duration of the Contract. BMC/ shall deal directly with the departments of the government or statutory authorities on behalf of the Contractor on all matters that require consultation and discussion with such department and shall ensure that the Contractor is able reasonably to perform its duties under the Contract. The Contractor will provide all reasonable assistance in procuring consents.
5. BMC shall provide to the Contractor, at no cost to the Contractor, free, continuous and exclusive access including statutory permits and consent from Bihar State Pollution Control Board for disposal of sludge and filter backwash water generated from the New Water Treatment Plant.

Schedule 3: Obligations of the Contractor

General Obligations of the Contractor:

- (i) The Contractor shall have the right and obligation to provide the Design–Build and Operation Services in the works site on an exclusive basis during the Contract period. Should the Employer desire to expand the Service Area, the Employer and the Contractor shall meet and negotiate in good faith with a view to agreeing on the provision of Operation Service by the Contractor to such expanded Service Area and the payment to the Contractor there for.
- (ii) The Contractor shall perform the Design – Build and Operation Services in accordance with governing Laws (including all environmental legislations), Asian Development Bank policies and procedures, guidelines and agreements with Government of India and Government of Bihar on the, prudent industry practice, the Performance Standards, the urban poor services policies, and the locally applicable regulatory social policies if any.
- (iii) The Contractor shall have care and custody of Works and Site during the term of this Contract.
- (iv) Subject to Section (ii) above, the Contractor shall have discretion in determining the means and methods to be used to perform the Design–Build and Operation Services.
- (v) The required all equipment , material and services to be incorporated in or required for works shall have their origin in any eligible source country

As defined by ADB:

- (i) Accounting, Audit
 - The Contractor shall maintain accurate and systematic accounts and records in respect of the Operation Service in such form and detail enabling clear identification of all relevant charges and cost incurred by the Contractor and the basis thereof as well as proper and timely technical and financial audits. Such accounts may be audited by external auditors as appointed by BUIDCo or ADB.
 - Financial accounts shall be in accordance with the accepted Indian accounting principles.
- (ii) Conflict of Interests
 - Neither the Contractor nor its sub-contractors nor the Contractor personnel shall engage during the term of this Contract, either directly or indirectly in any business professional activities in the Service Area which would conflict with the activities assigned to them under this Contract.
 - Notwithstanding Sections above, the Contractor will be eligible to bid for subsequent contracts related to the Operation Services, but shall not have any right of first refusal except in case of reuse and recycle of treated sewage which is part of the total city.
- (iii) Standard of Design–Build and Operation Services Provided by the Contractor
 - The Contractor shall perform all the Design–Build and Operation Service from the Commencement Date until the Contract Completion Date in accordance with Section 6 Employer Requirements, Schedule 1 to the Particular Conditions of Contract- Contractor

Payments and Schedule 2 to the Particular Conditions of Contract – Performance Targets and Measurements; as well as:

- The standards of areas on able and prudent Contractor;
- All relevant permits set forth in GCC Sub-Clause 2.2 and other permits for services inforce from time to time and;
- All governing Laws, in force from time to time.

Schedule 4: BMC Personnel (Deleted)

Schedule 5: Contractor's Payments

1. The total Contractor Payments comprises of following components:
 - a. PART A: DESIGN-BUILD COMPONENTS (Price Schedule No. 1 to 4)
 - b. PART B: ITEM RATE COMPONENTS - CONSTRUCTION WORKS (Price Schedule No. 7 to 8); and
 - c. PART C: OPERATION SERVICE (Price Schedule No. 9).

2. PART A: PAYMENT FOR DESIGN-BUILD COMPONENTS

Interim Payments for Design-Build works implemented during the Construction Period: Payment for the design, supply, erection, testing and commissioning of the items shall be paid as per the following schedule for each type of work.

While making running payments for the Design-Build Components carried out by the Contractor, the cost of works will be calculated based on price schedules' rates or the new rates as approved by the Employer. The adjustment in cost of Works will be calculated separately. The difference in adjusted cost and cost of Works already paid shall be paid once the adjustment in cost is calculated

The payments shall be made in percentages of total or pro rata CIP or amount upon Incoterm "CIP" and total or pro rata EXW amount upon Incoterm "Ex-Works" as under:-

2.1 Schedule No. 1: Plant and Mandatory Spare Parts Supplied from Abroad

2.1.1 Electro Mechanical Items

S No	Description of work	% of payment
1	Supply	70%
2	On completion of Installation	10%
3	On completion of Testing	10%
4	On completion Commissioning	10%
	Total	100%

2.1.2 Automation Equipment

S No	Description of work	% of payment
1	Supply	70%
2	On completion of Installation	10%
3	On completion of Testing	10%
4	On completion of Commissioning	10%
	Total	100%

2.2 Schedule No. 2: Plant and Mandatory Spare Parts Supplied from Within the Employer's Country

2.2.1 Electro Mechanical Items

S No	Description of work	% of payment
1	Supply	70%
2	On completion of Installation	10%

3	On completion of Testing	10%
4	On completion Commissioning	10%
	Total	100%

2.2.2 Automation Equipment

S No	Description of work	% of payment
1	Supply	70%
2	On completion of Installation	10%
3	On completion of Testing	10%
4	On completion of Commissioning	10%
	Total	100%

2.3 Schedule No. 3: Design Services

2.3.1 Approach Channel

S No	Description of work	% of payment
1	On completion of preliminary survey and other required survey, soil test etc.,	10%
2	On approval of Design and drawings	70%
3	On completion of construction works	10%
4	On approval of Final completion AS Built Drawings	10%
	Total	100%

2.3.2 Intake Well, Jack well, Connecting Pipe

S No	Description of work	% of payment
1	On completion of preliminary survey and other required survey, soil test etc.,	10%
2	On Approval of Structural Design& Drawing	70%
3	On completion of construction works	10%
4	On approval of Final completion AS Built Drawings	10%
	Total	100%

2.3.3 Water Treatment Plant

S No	Description of work	% of payment
1	Design of Up Gradation of Existing Sedimentation Tanks	5%
2	Design of RCC settled water Sump and Settled water Pump House	10%
3	Design of Inlet Chamber, Parshall flume and Flash Mixer 2 Nos	3%
4	Design of Flocculator 4 Nos	10%
5	Design of Plate Settlers	15%
6	Design of Filtration Units with Filter beds 12 Nos including bypass arrangement	10%
7	Design of Back wash Tank	3%
8	Design of Backwash pipe line	1%
9	Design of Chlorine contact time	2%

10	Design of Chemical Building	5%
11	Design of Chlorine Building	2%
12	Design of Administrative Building	5%
13	Design of Clear water Reservoir	5%
14	Design of Clear water Pump House	5%
15	Design of Sludge Balancing Tank	2%
16	Design of Sludge gravity Thickener	1%
17	Design of Thicken sludge sump	1%
18	Design of Supernatant Sump	1%
19	Design of Centrifuge Building/sludge dewatering unit	5%
20	Design of River Bank Protection works at WTP	1%
21	Design of Security Cabin	1%
22	Design of Staff Quarters	1%
23	Design of Internal Roads	1%
24	Design of Switch Yard at Intake and WTP and control Rooms	5%
	Total	100.00%

2.3.4 For Individual Components of WTP on the % mentioned above

S No	Description of work	% of payment
1	On completion of preliminary survey and other required survey, soil test etc.,	10%
2	On approval of Hydraulic Design and drawings	20%
3	On Approval of Structural Design and drawings	50%
4	On completion of construction works	10%
5	On approval of Final completion AS Built Drawings	10%
	Total	100.00%

2.4 Schedule No. 4: Installation and Other Services

2.4.1 Approach Channel

S No	Description of work	Part payment	Final payment
1	For every 2500 cubic metre earth work	16%	64%
2	on completion Bank protection for every 10m	8%	24%
3	After commission and final	12%	12%
	Total		100%

2.4.2 Intake well

S No	Description of work	Part payment	Final payment
1	On completion of each 1 m well sinking	4.4%	88%
2	On commissioning	12%	12%
			100%

2.4.3 Jack well cum Pump House

S No	Description of work	Part payment	Final payment
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1	On completion of each 1 m well sinking	3.4%	84%
2	On Completion of Super Structure	4%	4%
3	On Completion and commissioning	12%	12%
	Total		100%

2.4.4 Connecting Pipe

S No	Description of work	Final payment
1	Supply of pipe	58%
2	Laying and jointing	15%
3	Testing of pipe	15%
4	Commissioning pipe	12%
	Total	100%

2.4.5 Up-gradation of Sedimentation Tanks

S No	Description of work	Final payment
1	Cleaning of silt	10%
2	Demolition of wall	20%
3	Construction works	40%
4	Pipe connection	18%
5	Commissioning	12%
	Total	100%

2.4.6 Other Civil works in WTP

S No	Description of work	Final payment
1	Up to basement	20%
2	Up to super structure	10%
3	On completion entire structure	40%
4	On completion other amenities such as Electrification, Sanitation, pipe connection etc whichever is applicable	18%
5	On commissioning	12%
	Total	100%

2.4.7 Roads in Campus

S No	Description of work	Part payment	Final payment
1	On Completion of every 100 m	10%	88%
2	Installation	12%	12%
	Total		100%

3. PART B: PAYMENT FOR ITEM RATE COMPONENTS - CONSTRUCTION WORKS

3.1. Schedule No. 7: Raw Water Main

S No	Description of work	% of payment
1	Supply of pipes	60%
2	Laying and jointing	15%

3	Testing	15%
4	Commissioning	10%
	Total	100%

3.2. Schedule No. 8: Clear Water Rising Main

S No	Description of work	% of payment
1	Supply of pipes	60%
2	Laying and jointing	15%
3	Testing	15%
4	Commissioning	10%
	Total	100%

4. PART C: PAYMENT FOR OPERATION SERVICE

4.1. Schedule No. 8: Operation and Maintenance

The Contractor shall be eligible for payment for Operation Service from the Initial Take-over Date for operation service. The payment for Operation Service shall comprise the following but are not limited to:

- Wages for Contractor personnel;
- Cost of chemicals utilized in the treatment of water;
- Consumables for preventive and corrective maintenance of all existing and new infrastructure assets being operated and maintained by the Contractor;
- All cost of repairs undertaken as part of preventive and corrective maintenance;
- All cost related to administration, management, monitoring, reporting, accounts, regulatory compliance and incidental charges if any; and
- It is expressly clarified that all charges related to electricity payments, raw water extraction cost, if any, shall be paid directly by BMC or BUIDCo.

4.1.1. The payment will be made as per the actual quantity of water supplied based on the quoted rates

4.1.2. However the contractor will get maximum of 30% of the quoted rate for shortage of water supply over the earmarked minimum quantity mentioned in the BOQ for the particular year for the day in which, he fails to supply the water to the reservoirs due to the reason beyond his control like power failure, natural calamities and any other external forces.

4.1.3. The contractor has to supply potable water to all the service reservoirs as per the CPHEEO norms. If he fails to supply potable water as per the CPHEEO norms then reduction in price shall be applied over the quoted price as specified by the formula.

4.1.4. The Total Wastage of water in particular month shall not exceed 6% (Including losses in raw water main, Water treatment plant (4%) and Transmission mains (2%)). If the total wastage exceeds more than the specified, then price shall be adjusted as specified by the given formula.

4.1.5. Price (adjusted for performance) = 50% * quoted price * (Total supplied quantity meeting the potable standards in the month/earmarked quantity in the month for particular year) + 50% * quoted price * 100 * allowable wastage of water in % / actual wastage of water in %

4.1.6. The energy efficient machinery shall be installed to save energy. If the contractor fails to save energy and exceeds the energy consumption charges as per the Technical schedule given by him or maximum energy consumption charges specified by the employer, then the excess amount of electrical energy consumption charges shall be recovered from him.

5. Price Adjustment for Payment for Design-Build works:

The amount payable to the Contractor and valued at base prices in accordance with the payment Schedule shall be adjusted for rises or falls in the cost of Labor and materials as given in formula, by the addition or deduction of the amounts determined by the formulae prescribed in this Clause.

Increase or decrease in the cost of Labour and materials shall be calculated quarterly. The first statement of price adjustment shall be prepared at the end of quarter in which the work was awarded and the work done from the date of start to the end of quarter shall be taken into account. For subsequent statement, cost of work done during every quarter shall be taken into account. At the completion of work, the work done during the last quarter or fraction, thereof, shall be taken into account.

For the purpose of reckoning the work done during any period, bills prepared during the period shall be considered. Dates of recording measurements in the Measurement Book by the Employer's Representative shall be the guiding factor to decide the bills relevant to any period. The date of completion, as finally recorded by the Employer's Representative in the Measurement Book, shall be the criterion.

The index relevant to any quarter, for which such compensation is paid, shall be the arithmetical average of the indices relevant of the calendar month.

The amount to be added to or be deducted from the Payment Certificates for changes in cost shall be determined from formulae as stated below:

(a) LABOUR

$$V_L = 0.85 \times L / 100 \times R \times (I_{L1} - I_{L0}) / I_{L0}$$

V_L = Increase or decrease in the cost of work during the quarter under consideration.

R = Value of the work done during the quarter under consideration.

I_{L0} = Base Price which is Consumer Price Index for Industrial labour for Bhagalpur issued by Labour Bureau, Shimla on the base date.

I_{L1} = Final price (average for the quarter under consideration) which is Consumer Price Index for Industrial labour for Bhagalpur issued by Labour Bureau, Shimla.

L = Percentage of labour components.

(Note: In case of revision of minimum wages by the Government or other competent authority, nothing extra would be payable except the price escalation permissible under this Clause).

(b) Cement (excluding material supplied by the department).

$$V_C = 0.85 \times C / 100 \times R (L_{C1} - L_{C0}) / L_{C0}$$

V_C = Increase or decrease in the cost during the quarter under consideration.

R = Value of the work done during the quarter under consideration excluding the cost of material supplied by the department.

L_{C0} = Base price which is Wholesale Price Index for Cement and Lime issued by Reserve Bank of India Journal on the base date

L_{C1} = Final price (average for the quarter under consideration) which is the Wholesale Price Index for Cement and Lime issued by Reserve Bank of India

C = Percentage of Cement component.

(c) Bitumen:

$$V_b = 0.85 \times B / 100 \times R (B_i - B_o) / B_o$$

V_b = Increase or decrease in the cost of the work during the quarter under consideration.

R= Value of the work done during the quarter under consideration excluding the cost of materials supplied by the department.

B_o= Base price which is the Wholesale Price Index for Bitumen issued by Economic Advisor, Gol on the base date.

B_i= Final price (average for the quarter under consideration) which is the Wholesale Price Index for Bitumen issued by Economic Advisor, Gol.

B= Percentage of bitumen component excluding bitumen supplied by the Department.

(d) Ferrous metal (excluding material supplied by the department).

$$V_s = 0.85 \times S / 100 \times R (L_{s1} - L_{s0}) / L_{s0}$$

V_s= Increase or decrease in the cost during the quarter under consideration.

R= Value of the work done during the quarter under consideration excluding the cost of material supplied by the department.

L_{s0}= Base price which is the Wholesale Price Index for ferrous metal issued by Reserve Bank of India on the base date

L_{si}= Final price (average for the quarter under consideration) which is the Wholesale Price Index for ferrous metal issued by Reserve Bank of India

S= Percentage of steel component.

(e) HDPE/PVC Pipes and Specials:

$$V_f = 0.85 \times H / 100 \times R (F_1 - F_0) / F_0$$

V_f= Increase or decrease in the cost of work during the quarter under consideration.

R= The value of the work done during the quarter under consideration excluding the cost of materials supplied by the department.

F_o= Base price which is the Wholesale Price Index for Rubber and Plastic Product issued by Reserve Bank of India on the base date.

F_i= Final price (average for the quarter under consideration) which is the Wholesale Price Index for Rubber and Plastic Product issued by Reserve Bank of India.

H= Percentage of HDPE/PVC resin.

(f) Plant and Machinery and Spares:

$$V_f = 0.85 \times PM / 100 \times R (F_1 - F_0) / F_0$$

V_f= Increase or decrease in the cost of work during the quarter under consideration.

R= The value of the work done during the quarter under consideration excluding the cost of materials supplied by the department.

F_o= Base price which is Wholesale Price Index for Machinery and Machine Tools issued by Reserve Bank of India on the base date.

F_i= Final price (average for the quarter under consideration) which is the Wholesale Price Index for Machinery and Machine Tools issued by Reserve Bank of India.

H= Percentage of Construction machinery component.

(g) Other Material:

$$V_M = 0.85 \times O / 100 \times R \times (I_{M1} - I_{M0}) / I_{M0}$$

V_M= Increase or decrease in the cost during the quarter under consideration.

R= Value of the work done during the quarter under consideration excluding the cost of materials supplied by the department.

I_{M0}= Base price which is Wholesale price index (all commodities) published in Reserve Bank of India Journal on the base date.

I_M = Final price (average for the quarter under consideration) which is the wholesale price index (all commodities) published in Reserve Bank of India Journal.
 O = Percentage of other material components

The cost indices or reference prices stated in the table of adjustment data in section 4 shall be used.

Foreign currency payments, if any, will be converted into the local currency (INR) at the selling exchange rate, published by Reserve Bank of India, on the last date of quarter for which the index is required to be applicable.

Until such time as each current cost index is not available, the Employer shall determine a provisional index for the issue of Interim Payment Certificates. When a current cost index is available, the adjustment shall be recalculated accordingly.

Adjustment for changes in Cost will be applicable for amount of work carried out by the Contractor with in stipulated completion period or extended contract period for which delay is not attributable to the Contractor.

The price adjustment will be calculated on the date of removing hindrance for the cost of actual work done up to the stipulated completion period or the extended contract period for which delay is not attributable to the Contractor, as the case may be. It is further clarified that there may be hindrances that on handling may not lead to overall delay in the project and there can be hindrances which might lead to contract period being extended with delay not attributable to the Contractor.

Adjustment for the work items valued on the basis of Cost or current prices or new rate items shall be applicable from the next quarter in which new rate has been given.

Adjusted Amount: The adjusted amount of each Payment Certificate may be subject to any deductions there from for liquidated damages, and any other monies due to the Employer from the Contractor including the recovery of advance amounts, if any.

Items not to be included in the Price Adjustment Calculation: The following items are not to be included in the price adjustment calculation:

- (a) Liquidated damages.
- (b) Retention withheld and released.
- (c) Advance payments in the form of loans and their repayments.
- (d) Payment to 'nominated' Sub-Contractors included as 'provisional sums'.

6. Price Adjustment of payments for Operations:

All Operation Services under this Contract shall be governed in accordance to the adjustments for change in costs as provided in above clauses and based on following formula:

(A) LABOUR

$$V_L = 0.85 \times P_L / 100 \times R \times (I_{L1} - I_{L0}) / I_{L0}$$

V_L = Increase or decrease in the cost of work during the quarter under consideration.

R = Value of the work done during the quarter under consideration excluding the cost of materials supplied by the department.

I_{L0} = Base Price which is Consumer Price Index for Industrial labour for Bhagalpur issued by Labour Bureau, Shimla on the base date.

I_{L1} = Final price (average for the quarter under consideration) which is Consumer Price Index for Industrial labour for Bhagalpur issued by Labour Bureau, Shimla.

P_L = Percentage of labour components.

(Note: In case of revision of minimum wages by the Government or other competent authority, nothing extra would be payable except the price escalation permissible under this clause).

(B) Other Material:

$$V_M = 0.85 \times P_M / 100 \times R \times (I_{M1} - I_{M0}) / I_{M0}$$

V_M = Increase or decrease in the cost during the quarter under consideration due to change in rates of material.

R = The value of the work done during the quarter under consideration excluding the cost of materials supplied by the department.

I_{M0} = Base price which is Wholesale price index (all commodities) published in Reserve Bank of India Journal on the base date.

I_{M1} = Final price (average for the quarter under consideration) which is the wholesale price index (all commodities) published in Reserve Bank of India Journal.

P_M = Percentage of other material components

7. Conditions Applicable to Price Adjustment

The base date shall be the date 28 days prior to the deadline for submission of the Bid.

The date of adjustment shall be the midpoint of the period of manufacture or installation of the component or Plant.

The following conditions shall apply:

1. No price increase will be allowed beyond the original delivery date unless covered by an extension of time awarded by the Employer under the terms of the Contract. No price increase will be allowed for periods of delay for which the Contractor is responsible. The Employer will, however, be entitled to any price decrease occurring during such periods of delay.
2. If the currency in which the Contract price, is expressed is different from the currency of the country of origin of the labor and/or materials indexes, a correction factor will be applied to avoid incorrect adjustments of the Contract price. The correction factor shall correspond to the ratio of exchange rates between the two currencies on the base date and the date for adjustment as defined above.
3. No price adjustment shall be payable on the portion of the Contract price paid to the Contractor as an advance payment.

Schedule 6: Terms of Reference (ToR) of Auditing Body

1. Appointment: An independent body to be appointed by the Employer, under a separate contract, will act as an Auditing Body (AB) for the purpose of monitoring and evaluation of the performance of the Operations component of the Contract during the Contract Period. The AB shall play a positive and independent role in discharging its functions, thereby facilitating smooth implementation of the Contract.
2. Obligations: The key obligations of the AB shall be:
 - a) Review the Operations and Maintenance Plan and the Training Plan furnished by the Contractor and suggest modifications if any required especially with reference to the baseline service levels and investments proposed by the Contractor to achieve the Performance Standards stipulated in Clause 3, Section 6 [*Employer's Requirements*];
 - b) Monitor the performance in Operations of the Contractor and verify the periodical reports furnished by the Contractor in terms of achievement or maintenance of the Performance Standards;
 - c) Provide independent advise to the Parties under this Contract in times of requirement of revision or rebasing of the Performance Standards required due to the following events:
 - i. Substantial change in baseline parameters;
 - ii. Discovery of unknown assets and additional infrastructure which can be put to use resulting in revision of Mandatory Works;
 - iii. Failure of the performance of any of the existing assets other than the new or replaced assets implemented by the Contractor necessitating major maintenance by way of replacement;
 - d) Undertake periodical, at least six quarterly, on-site verification of the Operations and provide recommendations on any issues which require immediate attention and action from any of the Parties.
3. Reports: The AB shall prepare and submit to the Employer and BMC the following reports:
 - a) Six Quarterly report on validation of performance of Contractor with reference to the achievement or maintenance of the Performance Standards;
 - b) Issues, if any, with regard to operation, maintenance and management along with the details of the action taken for the resolution of the same;
4. Duration: The appointment of AB will be from start of Operation, maintenance and management to the entire duration of the Contract.

Section 9 - Contract Forms

This Section contains forms which, once completed, will form part of the Contract. The forms for Performance Security and Advance Payment Security, when required, shall only be completed by the successful Bidder after contract award.

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Notification of Award

[on letterhead paper of the employer]

Letter of Acceptance

..... date.

To: *Name and address of the contractor*

Subject: *Notification of Award Contract No.*

This is to notify you that your Bid dated *date* for execution of the *name of the contract and identification number, as given in the Bid Data Sheet* for the Accepted Contract Amount of the equivalent of *amount in words and figures and name of currency*, as corrected and modified in accordance with the Instructions to Bidders is hereby accepted by our Agency.

You are requested to furnish the Performance Security within 28 days in accordance with the Conditions of Contract, using for that purpose the Performance Security Form included in Section 9 (Contract Forms) of the Bidding Document.

Authorized Signature:

Name and Title of Signatory:

Name of Agency:

Attachment: Contract Agreement

Contract Agreement

THIS AGREEMENT made theday of,, between *name of the employer*. (hereinafter “the Employer”), of the one part, and *name of the contractor*. (hereinafter “the Contractor”), of the other part:

WHEREAS the Employer desires that the Works known as *name of the contract*. should be executed by the Contractor, and has accepted a Bid by the Contractor for the execution and completion of these Works and the remedying of any defects therein.

The Employer and the Contractor agree as follows:

1. In this Agreement, words and expressions shall have the same meanings as are respectively assigned to them in the Contract documents referred to.
2. The following documents shall be deemed to form and be read and construed as part of this Agreement. This Agreement shall prevail over all other Contract documents.
 - (a) the Contract Agreement,
 - (b) the Letter of Acceptance,
 - (c) the Letter of Technical Bid,
 - (d) the Letter of Price Bid,
 - (e) the Variation Nos *insert variation numbers if any*.
 - (f) the Particular Conditions of Contract – Part A,
 - (g) the Particular Conditions of Contract – Part B,
 - (h) the List of Eligible Countries that was specified in Section 5 of the Bidding Document
 - (i) the General Conditions of Contract,
 - (j) the Specifications,
 - (k) the Drawings,
 - (l) the completed Schedules including Bill of Quantities, and
 - (m) any other documents shall be added here.¹
3. In consideration of the payments to be made by the Employer to the Contractor as indicated in this Agreement, the Contractor hereby covenants with the Employer to execute the Works and to remedy defects therein in conformity in all respects with the provisions of the Contract.
4. The Employer hereby covenants to pay the Contractor in consideration of the execution and completion of the Works and the remedying of defects therein, the Contract Price or such other sum as may become payable under the provisions of the Contract at the times and in the manner prescribed by the Contract.

IN WITNESS whereof the parties hereto have caused this Agreement to be executed in accordance with the laws of *name of the borrowing country*. on the day, month and year indicated above.

¹ Tables of Adjustment Data may be added if the contract provides for price adjustment (see GCC 13.8).

Signed by

Signed by.....

for and on behalf of the Employer
in the presence of

for and on behalf the Contractor
in the presence of

Witness, Name, Signature, Address, Date

Witness, Name, Signature, Address, Date

Performance Security

..... *Bank's name, and address of issuing branch or office*¹

Beneficiary: *Name and address of the employer*

Date:

Performance Guarantee No.:

We have been informed that *name of the contractor*. (hereinafter called "the Contractor") has entered into Contract No. *reference number of the contract*. dated with you, for the execution of *name of contract and brief description of works*. (hereinafter called "the Contract").

Furthermore, we understand that, according to the conditions of the Contract, a performance guarantee is required.

At the request of the Contractor, we *name of the bank*. hereby irrevocably undertake to pay you any sum or sums not exceeding in total an amount of *name of the currency and amount in words*² (*amount in figures*.) such sum being payable in the types and proportions of currencies in which the Contract Price is payable, upon receipt by us of your first demand in writing accompanied by a written statement stating that the Contractor is in breach of its obligation(s) under the Contract, without your needing to prove or to show grounds for your demand or the sum specified therein.

This guarantee shall expire, no later than the Day of ,³, and any demand for payment under it must be received by us at this office on or before that date.

This guarantee is subject to the Uniform Rules for Demand Guarantees, ICC Publication No. 458 (*or ICC Publication No. 758 as applicable*), except that subparagraph (ii) of Sub-article 20(a) is hereby excluded.⁴

.....
Signature(s) and seal of bank (where appropriate)

Note to Bidder

If the institution issuing the performance security is located outside the country of the employer, it shall have a correspondent financial institution located in the country of the employer to make it enforceable.

- ¹ All italicized text is for guidance on how to prepare this demand guarantee and shall be deleted from the final document.
- ² The guarantor shall insert an amount representing the percentage of the contract price specified in the contract and denominated either in the currency(ies) of the contract or a freely convertible currency acceptable to the employer.
- ³ Insert the date 28 days after the expected completion date. The employer should note that in the event of an extension of the time for completion of the contract, the employer would need to request an extension of this guarantee from the guarantor. Such request must be in writing and must be made prior to the expiration date established in the guarantee. In preparing this guarantee, the employer might consider adding the following text to the form, at the end of the penultimate paragraph: "The Guarantor agrees to a one-time extension of this guarantee for a period not to exceed [6 months][1 year], in response to the Employer's written request for such extension, such request to be presented to the Guarantor before the expiry of the guarantee."
- ⁴ Or the same or similar to this clause specified in the Uniform Rules for Demand Guarantees, ICC Publication No. 758 where applicable.

Advance Payment Security

.....*Bank's name, and address of issuing branch or office*¹

Beneficiary: *Name and address of the employer*

Date:

Advance Payment Guarantee No.:

We have been informed that *name of the contractor*. . . . (hereinafter called "the Contractor") has entered into Contract No. *reference number of the contract*. . . . datedwith you, for the execution of *name of contract and brief description of works*. . . . (hereinafter called "the Contract").

Furthermore, we understand that, according to the Conditions of the Contract, an advance payment in the sum *name of the currency and amount in words*². (. *amount in figures*.) is to be made against an advance payment guarantee.

At the request of the Contractor, we *name of the bank*. hereby irrevocably undertake to pay you any sum or sums not exceeding in total an amount of *name of the currency and amount in words*³. (. *amount in figures*.) upon receipt by us of your first demand in writing accompanied by a written statement stating that the Contractor is in breach of its obligation under the Contract because the Contractor used the advance payment for purposes other than the costs of mobilization in respect of the Works.

It is a condition for any claim and payment under this guarantee to be made that the advance payment referred to above must have been received by the Contractor on its account number *Contractor's account number*. at *name and address of the bank*.

The maximum amount of this guarantee shall be progressively reduced by the amount of the advance payment repaid by the Contractor as indicated in copies of interim statements or payment certificates which shall be presented to us. This guarantee shall expire, at the latest, upon our receipt of a copy of the interim payment certificate indicating that ninety percent (90%) of the Contract Price has been certified for payment, or on the . . . day of ,⁴, whichever is earlier. Consequently, any demand for payment under this guarantee must be received by us at this office on or before that date.

This guarantee is subject to the Uniform Rules for Demand Guarantees, ICC Publication No. 458 (*or ICC Publication No. 758 as applicable*).

.....
Signature(s) and seal of bank (where appropriate)

Note to Bidder

If the institution issuing the advance payment security is located outside the country of the employer, it shall have a correspondent financial institution located in the country of the employer to make it enforceable.

- 1 All italicized text is for guidance on how to prepare this demand guarantee and shall be deleted from the final document.
- 2 The guarantor shall insert an amount representing the amount of the advance payment denominated either in the currency(ies) of the advance payment as specified in the Contract, or in a freely convertible currency acceptable to the employer.
- 3 Footnote 2.
- 4 Insert the expected expiration date of the time for completion. The employer should note that in the event of an extension of the time for completion of the contract, the employer would need to request an extension of this guarantee from the guarantor. Such request must be in writing and must be made prior to the expiration date established in the guarantee. In preparing this guarantee, the employer might consider adding the following text to the form, at the end of the penultimate paragraph: "The Guarantor agrees to a one-time extension of this guarantee for a period not to exceed [6 months][1 year], in response to the Employer's written request for such extension, such request to be presented to the Guarantor before the expiry of the guarantee."